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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**MEDICAL RESERVE CORPS VOLUNTEERS' ABILITY
AND WILLINGNESS TO REPORT TO WORK FOR THE
DEPARTMENT OF HEALTH DURING CATASTROPHIC
DISASTERS**

by

Shelly Schechter

March 2007

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REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE March 2007	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE Medical Reserve Corps Volunteers' Ability and Willingness to Report to Work for the Department of Health During Catastrophic Disasters			5. FUNDING NUMBERS	
6. AUTHOR(S) Shelly Schechter				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) Local public health systems must have the capacity to meet the surge requirements of a health emergency that requires an extraordinary increase in activity including the rapid prophylaxis of an effected community. According to recent studies of paid healthcare professionals, approximately forty percent may be unable or unwilling to report to work during catastrophic disasters, but these questions have not yet been asked in the volunteer community. The Medical Reserve Corps (MRC) is a group of medical volunteers with a primary mission of support to the public health system during periods of surge. This thesis surveyed the members of a county health department MRC to determine their ability and willingness to volunteer in a public health emergency. The survey also elicited information on barriers and enablers to response and perceptions of community preparedness. Both significant differences in the responses of paid versus volunteer health professionals regarding their ability and willingness and striking similarities in their responses regarding barriers and enablers to report to work were identified. Volunteer motivation, cognitive dissonance and the nature of self selected volunteers are examined as they relate to these findings and strategies to strengthen the ability and willingness of MRC units to respond with the public health system are suggested.				
14. SUBJECT TERMS Public Health Surge Capacity; Volunteer Motivation; Ability and Willingness; Cognitive Dissonance; Medical Reserve Corps; Public Health Disasters			15. NUMBER OF PAGES 97	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

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**MEDICAL RESERVE CORPS VOLUNTEERS' ABILITY AND WILLINGNESS
TO REPORT TO WORK FOR THE DEPARTMENT OF HEALTH DURING
CATASTROPHIC DISASTERS**

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Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

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ABSTRACT

Local public health systems must have the capacity to meet the surge requirements of a health emergency that requires an extraordinary increase in activity including the rapid prophylaxis of an effected community. According to recent studies of paid healthcare professionals, approximately forty percent may be unable or unwilling to report to work during catastrophic disasters, but these questions have not yet been asked in the volunteer community. The Medical Reserve Corps (MRC) is a group of medical volunteers with a primary mission of support to the public health system during periods of surge.

This thesis surveyed the members of a county health department MRC to determine their ability and willingness to volunteer in a public health emergency. The survey also elicited information on barriers and enablers to response and perceptions of community preparedness. Both significant differences in the responses of paid versus volunteer health professionals regarding their ability and willingness and striking similarities in their responses regarding barriers and enablers to report to work were identified. Volunteer motivation, cognitive dissonance and the nature of self selected volunteers are examined as they relate to these findings and strategies to strengthen the ability and willingness of MRC units to respond with the public health system are suggested.

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ACKNOWLEDGMENTS

This thesis was completed because of the intellectual guidance of my academic advisors, the support of my professional colleagues, and the love and patience of my family. This study was made possible however, because of the willingness of the members of the Nassau County Department of Health Medical Reserve Corps to share their thoughts as well as their time and talents with the public health community. These volunteer health professionals continue to have my deepest respect and gratitude.

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I. INTRODUCTION

As a result of the national influenza vaccine shortage during fall of 2004, our annual vaccination program routinely planned for 20,000 older adults at 84 senior centers in Nassau County, New York, was cancelled. When the State Health Department notified the County Health Department that we would receive 10,000 doses of influenza vaccine for this program in mid-November, we had to activate emergency plans to rapidly administer the vaccine. We designed this flu vaccine program using our Health Department Point of Dispensing (POD) Plan, part of the bioterrorism preparedness plan and intended to dispense medication to large numbers of people in a short period of time. Over the course of two days, we vaccinated 7,624 older adults at a single location at the local community college. The average age of the recipients was 75 years. This event was the largest single vaccine program ever conducted in New York State and 99% of the participants reported a high level of satisfaction.

The event not only provided us with an opportunity to evaluate the appropriateness of the Health Department's bioterrorism emergency plans for older adults living in the community but demonstrated to all involved the critical role of the Medical Reserve Corps (MRC) in meeting public health surge capacity. Of the fifty vaccinators used for this event, thirty-five were MRC volunteers and fifteen were paid health department staff. If there was any doubt about the value of the MRC, the program showed that an MRC could assist in meeting surge capacity during public health emergencies. Clearly, the health department should continue to invest resources to ensure this capacity and capability. As one unnamed senior citizen commented after she received her vaccination, "This program went very, very well, especially considering it was a government operation."

A. PROBLEM STATEMENT

A critical new responsibility for state and local health departments throughout the United States is the rapid distribution of prophylactic medications to the entire population following a decision to initiate treatment for a widespread disease outbreak. The predictive resource utilization model developed to determine staffing requirements for this distribution recommends staffing levels that most often exceed the number of

employees available to a health department.¹ This deficit creates a public health surge capacity need for additional health professionals to work with health departments to protect the residents in the community. The Department of Health and Human Service's Office of the Surgeon General established the Medical Reserve Corps (MRC) in 2002 to function as a clearinghouse for information and best practices to help communities establish, operate and sustain MRC units nationwide.

As important as these MRC programs are, however, little research has assessed the responsiveness of these volunteer health professionals when they are deployed to work for their local health department during a public health emergency, especially in response to a communicable disease. Similar studies in groups of hospital staff, emergency medical technicians and public health workers indicate that several factors determine if a worker will report to duty. Understanding the ability and willingness of these essential health care volunteers to report to duty with their local health department is crucial to ensure the effectiveness of plans that identify a role for medical volunteers to meet public health surge capacity needs.

The international outbreak of the illness known as severe acute respiratory syndrome (SARS) in 2003 and Hurricane Katrina in 2005 represent examples of recent disasters where health care workers and public safety employees have been reluctant to report for duty.² Because volunteer health professionals are often crucial in meeting local health department public health surge capacity needs, it is important to identify factors that influence their ability and willingness to report to work. This knowledge is necessary to accurately mitigate response barriers and create targeted strategies to help volunteers respond safely and effectively to a variety of public health emergencies.

¹ Nathaniel Hupert and Jason Cuomo, *Weill/Cornell Mass Prophylaxis/Vaccination Model*, Vol. 1 (New York, NY: Weill Medical College of Cornell University, 2003), <http://www.ahrq.gov/research/biomodel/index.asp> [Accessed January 19, 2006].

² Aaron Levin, "Assessing First Responders' Needs Favored Over Formal 'Debriefing'," *Psychiatric News* 40, no. 20 (October 21, 2005), <http://pn.psychiatryonline.org/cgi/content/full/40/20/5> [Accessed February 14, 2006]. J. B. Treaster, "Police Quitting, Overwhelmed by Chaos," *New York Times*, sec. A1, September 4, 2005. David Koh, Meng Kin Lim, and Sin Eng Chia, "Risk Perception and Impact of Severe Acute Respiratory Syndrome (SARS) on Work and Personal Lives of Healthcare Workers in Singapore: What can we Learn?" *Medical Care* 43, no. 7 (2005), <http://www.lww-medicalcare.com/pt/re/medcare/abstract.00005650-200507000-00006.htm> [Accessed February 20, 2006].

B. RESEARCH QUESTIONS

This thesis examines two core questions. First, what are the social and personal characteristics, such as fear for personal safety and family obligations, that influence the ability and willingness of Medical Reserve Corps volunteers to report to duties for the department of health during catastrophic disasters? Second, once potential contributors and barriers to response are known, what actions should local health departments take to assure that MRC volunteers will be able and willing to report to duty?

C. SIGNIFICANCE OF RESEARCH

Fundamental obligations of public health agencies responsible for population-based healthcare include prevention of epidemics and the spread of disease, response to disasters and assisting communities in recovery.³ Assuring the availability of a public health workforce of sufficient capacity to rapidly distribute prophylactic medications is a responsibility of all health departments. Many of these agencies require the use of volunteers to meet surge capacity needs. The County's experiences with delivering flu vaccines under time constraints to large numbers of people demonstrate—perhaps unlike any other experience across the country—the critical function that health care volunteers perform in an emergency. By providing unique data on these volunteers' willingness and ability to participate, this study of Nassau County volunteers will guide those responsible for public health emergency preparedness with critical questions and issues to include in their plans.

³ James A. Harrell and Edward L. Baker, "The Essential Services of Public Health," *American Public Health Association*, <http://www.apha.org/ppp/science/10ES.htm> [Accessed February 14, 2006].

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II. LITERATURE REVIEW

Historically, using medical volunteers to respond to catastrophic events, in both times of peace and times of war, indicate the critical role these individuals play in determining the outcomes of the actions. Volunteers were essential, for example, in combating typhoid fever during the Spanish American War. Typhoid killed the majority of U.S. soldiers during the War, in which more soldiers died from diseases than from enemy battle. Over two hundred thousand volunteers, including the Rough Riders, overwhelmed the twenty eight thousand peacetime soldiers responsible for training, housing and equipping them. Significant reforms and research emerged from this conflict and include development of a nurse corps and a medical reserve corps.

Since the Spanish American War, military medicine has evolved both technologically and strategically.⁴ In response to the need for medical personnel during World War I, Canada's St. John Ambulance established a reserve of approximately 2,000 informally trained nursing volunteers as Voluntary Aid Detachment nurses to assist in military hospitals at home and overseas. During the 1917 Halifax munitions ship explosion, and the 1918 influenza epidemic, these volunteers provided substantial assistance to medical and nursing personnel. They proved a valuable asset and a positive influence for the future development of Canadian nursing.⁵

A. IDENTIFYING CORE COMPONENTS OF A PUBLIC HEALTH DISASTER

Disaster medicine specialist Dr. Eric Noji offers a definition of disaster for public health based on the consequences of the event on health and health services to the people in the affected community. A disaster is the result of a vast breakdown in the relationship of humans and their environment to the degree that the community requires extraordinary efforts and assistance to restore health.⁶

⁴ Edward McSweegan, "Military Medical History: Book Review of Bullets and Bacilli: The Spanish American War and Military Medicine by Vincent J. Cirillo," *Journal of the American Medical Association* 292, no. 4 (July 28, 2004), 506-507.

⁵ L. J. Quiney, "Filling the Gaps: Canadian Voluntary Nurses, the 1917 Halifax Explosion, and the Influenza Epidemic of 1918," *Canadian Bulletin of Medical History* 19, no. 2 (2002), 351-373.

⁶ Eric K. Noji, ed., *The Public Health Consequences of Disasters* (New York: Oxford University Press, 1997), 7.

In modern times, biological threats can occur either naturally or intentionally, and globalization has increased speed of transmission of both infectious agents and information. The speed at which the relationship of humans to their environment can change requires medications to be distributed much more quickly than before. The speed of an emergency response directly relates to the number of people protected.

The concept and development of model systems to distribute mass prophylaxis to citizens has significantly changed since the Centers for Disease Control (CDC) began funding bioterrorism in 1999. From 1999 to 2004, most public health agency bioterrorism preparedness planners developed “Points of Dispensing” (PODs) to provide medicine to citizens in an area of risk during a large-scale public health emergency. Predictive resource utilization models were developed to determine physical asset and staffing requirements for PODs based on local variables such as population, staff, and number of days and hours of operation.⁷

In June, 2004, the Centers for Disease Control and Prevention (CDC) announced a new pilot program to distribute medication called the Cities Readiness Initiative (CRI). CRI provides direct funding to the twenty-one largest metropolitan areas in the United States to improve the operational capacity to receive, distribute and dispense Strategic National Stockpile assets. Following a bioterrorism event for which antibiotics are an appropriate countermeasure, a CRI city must provide prophylaxis to the affected population within 48 hours of the time of the decision to do so.⁸ “Once a warning or valid detection is made, the ability to deliver and distribute antibiotics or administer vaccines is the life saving component of this (CRI) strategy. It is frequently understated and underestimated, but it literally is the means to mitigate an event.”⁹

A core capability of an effective response must reflect the availability of an adequate public health infrastructure. Approximately 3,000 municipal, city and county

⁷ Nathaniel Hupert, “Community-Based Mass Prophylaxis: A Planning Guide for Public Health Preparedness,” *AHRQ Publication* no. 04-0044 (August 2004), <http://www.ahrq.gov/research/cbmprophyl/> [Accessed November 17, 2005].

⁸ Centers for Disease Control and Prevention, “Cooperative Agreement: Guidance for Public Health Emergency Preparedness,” *Cities Readiness Initiative(CRI)* app. 3 (July 1, 2005), <http://www.bt.cdc.gov/planning/guidance05/pdf/appendix3.pdf> [Accessed October 22, 2005].

⁹ Robert P. Kadlec (testimony, Little Hoover Commission, May 26, 2005), <http://www.lhc.ca.gov/lhcdir/emergprep/KadlecMay05.pdf> [Accessed November 20, 2005].

health departments in the United States routinely conduct disease outbreak investigations and control and environmental health measures such as restaurant inspections and water testing. Many of these agencies also deliver clinical services including treatment of sexually transmitted diseases, prenatal care and childhood immunizations. Sixty percent of local public health agencies throughout the country are county-based and employ a median of 13 full-time workers. Approximately two-thirds of local public health agencies serve communities of less than 50,000 people. Annual agency expenditures range from \$0 to over \$836 million, while the median local public health agency expenditure in 1999 was \$621,100.¹⁰

In 2000, the Health Resources and Services Administration in the Department of Health and Human Resources (HRSA) estimated that approximately 450,000 individuals are working in salaried public health positions, with many more contributing through nongovernmental organizations or on a voluntary basis.¹¹ Limited information is available regarding the number of volunteers in community based agencies, but the national estimate is 2.85 million people.¹²

¹⁰ National Association of County and City Health Officials, *Local Public Health Agency Infrastructure: A Chartbook* (Washington, D.C.: National Association of County and City Health Officials, 2001), http://archive.naccho.org/documents/chartbook_frontmatter1-2.pdf [Accessed February 21, 2006].

¹¹ Institute of Medicine of the National Academies, *The Future of the Public's Health in the 21st Century*, Vol. 1 (Washington, D.C.: The National Academies Press, 2003), 116.

¹² *Ibid.*, 361.

Very few local public health agencies, however, employ enough paid staff to meet the surge capacity requirements for rapid mass prophylaxis of their residents. Although models vary, to distribute medications in four days, most plans anticipate a need for at least 500 workers for every 100,000 people served. Approximately one-third of that staff requires some level of medical training for triage, screening and distribution.¹³ This shortage of paid public health staff is exemplified in Nassau County, New York. With a population of 1.35 million residents, the Nassau County Health Department's staff of 350 includes only 40 registered nurses and 5 physicians. To provide prophylaxis to all residents in five days, the Health Department would need to operate 35 points of distribution using over 5,000 staff. Volunteers remain absolutely essential in any distribution strategy, and several alternate distribution models must also be considered.

B. THE ROLE OF HEALTH PROFESSIONALS IN PUBLIC HEALTH SURGE CAPACITY

Even with adequate infrastructure and a clear understanding of the potential problems, health emergency response needs could easily overwhelm existing capacities. The ability to “surge” assets to the problem is, therefore, a core capability in planning for such incidents. Surge capacity is described as the ability of a health care system to expand rapidly beyond the routine level of service to meet an increased demand for health care services in response to large-scale public health emergencies. Surge capacity is a function of three factors: the volume of cases, time as a function of the volume of cases, and the complexity of care. The 2003 SARS epidemic in Canada, where a relatively small number of patients severely challenged the Toronto health care delivery capability, exemplifies a limited event in terms of number, but significant in terms of complexity of care, and severely stressed the health system capability.¹⁴

Concern continues that serious shortages in response capability in the long-neglected federal, state and local public health agencies still exist, triggering

¹³ John A. Clizbe, "Challenges in Managing Volunteers during Bioterrorism Response," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science* 2, no. 4 (2004): 296.

¹⁴ Agency for Healthcare Research and Quality, “Addressing Surge Capacity in a Mass Casualty Event: Bioterrorism and Health System Preparedness,” *AHRQ Publication* no. 06-0027 (2006), <http://www.ahrq.gov/news/ulp/btbriefs/btbrief9.htm> [Accessed March 5, 2006].

uncomfortable doubts about the health care system's so-called surge capacity capabilities if a worst-case scenario such as a bioterrorist event were to occur.^{15,16}

For example, an evaluation of the response to the 2001 anthrax attacks concludes that the U.S. medical and public health systems needed to significantly increase capabilities in the public health decision making process, coordination and sharing of information among health organizations and professional communities, risk communication to the media and the public in the context of scientific uncertainty, and address the problems of insufficient personnel, resources and operational systems. In response to the 2001 anthrax attacks, the CDC deployed over 350 employees to the five anthrax epicenters, including 136, or 93% of their Epidemiologic Intelligence Services (EIS) officers. An attack involving more victims or more locations would have overwhelmed this frail network of response capabilities.¹⁷

General Accounting Office testimony before the U.S. House Committee on Government Reform in 2004 indicated that although states have made progress in developing many important aspects of public health preparedness, no state is fully prepared to respond to a major public health threat. States have improved their disease surveillance systems, laboratory capacity, communication capacity and the personnel needed to respond to public health threats; however, gaps remain in each of these areas. Many states lack the surge capacity staff to evaluate, diagnose and treat large numbers of people during a public health emergency.¹⁸

¹⁵ Victoria Stagg Elliott, "Public Health's Main Fear Over Bioterrorism: Surge Capacity," *American Medical News* 46, no. 8 (February 24, 2003), <http://proquest.umi.com/pqdweb?did=295928061&Fmt=7&clientId=65345&RQT=309&VName=PQD> [Accessed January 22, 2006].

¹⁶ E. Gursky, T. Inglesby, and T. O'Toole, "Anthrax 2001: Observations on the Medical and Public Health Response," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science* 1, no. 2 (2003): 97-110.

¹⁷ Ibid.

¹⁸ Janet Heinrich, "Public Health Preparedness: Response Capacity Improving, but Much Remains to be Accomplished," *GAO-04458T* (February 12, 2004), <http://www.gao.gov/cgi-bin/getrpt?GAO-04-458T> [Accessed June 14, 2006].

C. ABILITY AND WILLINGNESS OF MEDICAL VOLUNTEERS TO SERVE

The ability and willingness of individuals to respond to the information and instructions provided in an emergent situation has been studied in relation to the response of citizens, as well as the responses of health care professionals. For instance, the World Health Organization (WHO) reports a total of 8,096 probable cases of SARS during the 2003 epidemic, of which 1,706 (or more than 20%) were health care workers.¹⁹ Researchers in both North America and Asia evaluated the willingness of health care workers to report to work during this epidemic. They conclude that serious concerns exist with regards to health care workers' willingness to report to work during different types of catastrophic events. Fear for personal and family health and lack of adequate personal protective equipment and training directly affect the willingness to report to work.²⁰

The willingness and ability of community residents to comply with public health messages during a biological emergency is critical in the development of effective emergency preparedness planning. In 2003, the W.K. Kellogg Foundation funded a study by the Center for the Advancement of Collaborative Strategies in Health at the New York Academy of Medicine. This study evaluates the public response to instructions following a smallpox outbreak or a dirty bomb attack. A phone survey of 2,545 adults found the following: only 10% of the respondents think their community is well-prepared to deal with these types of emergencies; only 20% would go to a public smallpox vaccination site; and 60% would have serious worries about the vaccine.²¹ The researcher concludes that terrorism response planners need to learn from the public as well as talk to the public.

¹⁹ World Health Organization, "Epidemic and Pandemic Alert and Response: Summary of Probable SARS Cases with Onset of Illness from 1 November 2002 to 31 July 2003," http://www.who.int/csr/sars/country/table2004_04_21/en/index.html [Accessed March 18, 2006].

²⁰ J. S. Gullion, "School Nurses as Volunteers in a Bioterrorism Event," *Biosecurity and Bioterrorism* 2, no. 2 (2004), 112-117. G. C. Alexander and M. K. Wynia, "Ready and Willing? Physicians' Sense of Preparedness for Bioterrorism," *Health Affairs* 22, no. 5 (September/October 2003): 189-197.

²¹ R. D. Lasker, *Redefining Readiness: Terrorism Planning through the Eyes of the Public* (New York: The New York Academy of Medicine, 2004), <http://www.cacsh.org/pdf/RedefiningReadinessStudy.pdf> [Accessed February 17, 2006].

We've been spending billions of dollars working out the logistics and technology of responding to terrorist attacks, and obviously that is very important. But our study shows that even if the nation gets all of that right, the plans that are being developed now are destined to fail because they are missing an important piece of the puzzle: how the American public would react to these kinds of emergency situations. Basically, current plans don't take into account all of the risks that people would face, so they unwittingly put many people in very difficult decision-making predicaments.²²

Studies of the ability and willingness of physicians, school nurses, emergency medical technicians and health care workers to report to work as paid employees during a disaster have resulted in relatively consistent findings regarding the lack of education and training as a barrier to response.

A 2003 study of physicians found that although 80% are willing to continue to care for patients in their primary care practice in the event of an outbreak of an unknown but potentially dangerous illness, only 46% of these physicians believe in a professional duty to treat patients in an epidemic. Since physicians who indicate a professional duty to treat are four times as likely to report during this type of outbreak, the study suggests the need for a renewed emphasis on professional obligation. There was also a positive correlation between the physicians' sense of personal preparedness and bioterrorism training, suggesting that emergency preparedness training might foster a greater sense of readiness.²³

Similarly, in a survey of school nurses in Texas, Guillion reports that as personal risk increases, school nurses are less willing to care for patients. He identifies a positive relationship between the level of education about the nurse's emergency response role and the nurse's willingness to respond in the presence of personal risk.²⁴ These findings reinforce the importance of continued education on risk and personal protection.

²² L. Barclay, "Public Perceptions Should be Considered in Terrorism Planning: A Newsmaker Interview with Roz D. Lasker, MD," *Medscape Today*, September 22, 2004, <http://www.medscape.com/viewarticle/489704> [Accessed February 20, 2006].

²³ G. C. Alexander and M. K. Wynia, "Ready and Willing? Physicians' Sense of Preparedness for Bioterrorism," *Health Affairs* 22, no. 5 (September/October 2003): 189-197.

²⁴ Guillion, "School Nurses as Volunteers in a Bioterrorism Event."

A 2003 national sample of emergency medical technicians (EMT) in the United States demonstrates that EMTs were much less willing than able to respond to potential terrorist related incidents. However, EMTs who had recently received terrorism related education were twice as likely to respond to a smallpox incident as those who had not been trained. This study concludes that training, attention to interpersonal concerns, and instilling a sense of duty may increase EMT response rates.²⁵

In 2005, Qureshi reported on a survey of 6,428 health care workers from 47 health care facilities in the New York City area to determine ability and willingness to report to work during different types of catastrophic events. Qureshi suggests a distinct difference between the constructs of ability and willingness and defines ability as the capability of the individual to report to work and willingness as a personal decision to report to work. Survey results indicate that health care workers are most able to report to work for a mass casualty incident, environmental disaster or chemical event. They are least able to report during a smallpox epidemic, radiological event, SARS outbreak or severe snow storm. In regards to willingness, health care workers are most willing to report during a snowstorm, mass casualty incident or environmental disaster. They are least willing during a SARS outbreak, radiological event, smallpox epidemic or chemical event. This research demonstrates a general ability and willingness to report to work during natural traumatic and environmental disasters, but only about half would report to work in a smallpox event. Barriers to ability include transportation and family care. Barriers to willingness are fear and concern for family and personal health.²⁶

A statewide survey of hospital personnel conducted in Israel during the Persian Gulf War examines the willingness of staff to report to work following a hypothetical unconventional missile attack. Overall, 42% of the staff is willing to report to work but that rate increases to 86% if safety measures are provided. Males, administrative staff

²⁵ C. DiMaggio, D. Markenson, M. Fareri, G. Loo, and I. Redlener, "The Willingness of U.S. Emergency Medical Technicians to Respond to Terrorist Incidents," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 3, no. 4 (December 2005): 331-337, <http://www.liebertonline.com/doi/pdfplus/10.1089/bsp.2005.3.331> [Accessed August 9, 2006].

²⁶ K. Qureshi, R. Gershon, and M. Sherman, "Health Care Workers' Willingness and Ability to Report to Duty during Catastrophic Disasters," *Journal of Urban Health* 82, no. 3 (2005): 378-388.

and parents of children older than 14 years of age are the most willing to report to work in these circumstances. Extensive inter-hospital variation in response was noted.²⁷

A 2005 survey of Florida healthcare providers assesses the levels of preparedness and willingness to respond to a bioterrorism attack and identifies predictive factors for these two constructs. The results demonstrate that only 32% of the 2,279 respondents are both competent and willing to respond to a bioterrorism event. In their local community, 82.7% of providers are willing to respond and 53.6% within the state. Perceived threats of a bioterrorism attack, perceived benefits of trainings and drills and “feeling” prepared are predictors of overall preparedness.²⁸

Local health departments play a crucial response role in national preparedness planning for biological emergencies, including pandemic influenza. In 2005, the Johns Hopkins Center for Public Health Preparedness surveyed 308 employees at three health departments in Maryland to determine factors that may influence local public health workers' ability and willingness to report to duty. This study finds that nearly half of the local health department workers are unlikely to report to duty during a pandemic. The stated likelihood of reporting to duty is significantly greater for clinical than technical and support staff, and perception of the importance of one's role in the agency's overall response is the single most influential factor associated with willingness to report.

These researchers conclude that the perceived risk among public health workers is associated with several factors peripheral to the actual hazard of the event. These risk perception modifiers include knowledge gaps, ambiguity regarding one's exact tasks, and questionable ability in performing one's role as risk communicator. The risk perception modifiers are all significantly associated with a higher perceived personal risk and a two-to ten-fold decrease in willingness to report to duty. These factors prove more influential than the perceived level of family ability to function in one's absence. Public health employees who are intended to serve as the source of risk communication for their

²⁷ Yaron Shapira et al, "Willingness of Staff to Report to Their Hospital Duties Following an Unconventional Missile Attack: A State-Wide Survey," *Israel Journal of Medical Sciences* 27, no. 11-12 (November/December 1991).

²⁸ Jeffrey S. Crane, "Assessment of the Community Healthcare Providers' Ability and Willingness to Respond to a Bioterrorist Attack in Florida," Doctor of Philosophy, University of South Florida, 1-160.

communities represent a community with specific perceptions that must be addressed in the context of emergency preparedness training.²⁹

A medical ethicist describes the concept of duty of care for healthcare workers as being neither fixed nor absolute but heavily dependent on the situational context. The nature and scope of the work, presence of conflicting duties and competing obligations and the level of risk in the work environment all influence the limits of the duty of care. Policy guidelines on the duty of care should include the healthcare professionals' duty to care in a public health emergency. Healthcare employers also have a set of reciprocal responsibilities toward their staffs, which include duties to inform, protect and support healthcare personnel.³⁰

Most research literature on ability and willingness of paid healthcare workers to report to work during events that affect the public health exposes serious concerns that a significant percentage of these individuals may perceive the risks of the event and their personal roles and capabilities as prohibitive. The reports of ability and willingness appear similar among the various types of paid health care providers including private practice physicians, school nurses, emergency medical technicians, hospital workers and public health staff. Approximately forty percent report that they will not be available to perform their duties during a disaster. Little research exists, however, on volunteer health care professionals' ability and willingness to report to duty and whether this group of individuals shares similar concerns and constraints.

D. MEDICAL RESERVE CORPS (MRC) VOLUNTEERS

Volunteering in government agencies is widespread, accounting for an estimated 20-30% of all volunteer efforts.³¹ A more organized approach for utilizing medical and public health volunteers in the United States during catastrophic disasters was evident following the events of 2001. Of particular concern were issues such as identification,

²⁹ Ran D. Balicer, Saad B. Omer, Daniel J. Barnett, and George S. Everly, "Local Public Health Workers' Perceptions Toward Responding to an Influenza Pandemic," *BioMed Central Public Health* 6, no. 99 (2006): 1-14, <http://www.biomedcentral.com/1471-2458/6/99> [Accessed September 15, 2006].

³⁰ David K. Sokol, "Virulent Epidemics and Scope of Healthcare Workers' Duty of Care," *Emerging Infectious Diseases* 12, no. 8 (August 2006): 1238-1241, <http://www.cdc.gov/eid> [Accessed October 4, 2006].

³¹ J. Brudney, "The Effective Use of Volunteers: Best Practices for the Public Sector Community Service," *Law and Contemporary Problems* 62, no. 4 (Autumn 1999): 219-255, <http://links.jstor.org/> [Accessed February 16, 2006].

credentialing, training, liability and activation of licensed health professionals, many of whom were spontaneously reporting to disaster scenes to offer assistance. The Office of the Surgeon General established the Medical Reserve Corps (MRC) in the Department of Health and Human Services in July 2002. The MRC's mission is to establish community-based teams of local health professionals who can contribute their expertise both in times of disaster and for other community initiatives. Over 230 MRC units currently operate in the United States, with over 30,000 individuals registered as MRC volunteers who supplement existing emergency and public health agencies in the community. The local MRC unit sets the requirements for MRC volunteers, and they are most often based on the needs of the sponsoring agency.³²

In 2002, the Office of the Surgeon General awarded one of the initial fifty demonstration project grants to the Nassau County Department of Health MRC for a three year period. The Nassau County MRC uses a public health model and it assists the Health Department respond to public health surge capacity needs such as mass prophylaxis. Nassau County provides immunity from professional liability for its MRC volunteers who are credentialed and deployed by the Department of Health. The Health Department has deployed MRC volunteers for several events, both emergent and routine in nature, including response to rabies outbreaks, influenza vaccine administration programs and local first responder prophylaxis drills.

All sectors of the healthcare system have plans to increase staffing in order to address "surge capacity" needs during mass casualty or public emergencies. Many public health plans include augmenting paid staff with Medical Reserve Corps volunteers. Several studies have evaluated the ability and willingness of paid healthcare employees to report to work during catastrophic events, and these studies reveal numerous issues that create barriers to ability and willingness to respond.

No study as yet has evaluated the ability or willingness of healthcare volunteers to report during a public health or mass casualty incident. This study's research includes a survey of the 324 Nassau County MRC volunteers to evaluate their ability and

³² M. L. Hoard and R. J. Tosatto, "Medical Reserve Corps: Strengthening Public Health and Improving Preparedness," *Disaster Management and Response* 3, no. 2 (2005), <http://download.journals.elsevierhealth.com/pdfs/journals/1540-2487/PIIS1540248705000039.pdf> [Accessed October 27, 2006].

willingness to participate in public health disaster response activities. The survey treats ability and willingness as two separate constructs and describes six event scenarios to which the volunteer may be asked to report. Respondents also answered the identical question posed to the public health staff in the Johns Hopkins study regarding role significance, as this question has the highest predictive value for ability and willingness. MRC members identified and prioritized enablers and barriers to participation in public health emergencies. The respondents also rated levels of preparedness among various communities and social groups. The knowledge gained from this project will help inform public health policy makers when developing surge capacity plans.

III. RESEARCH METHODOLOGY

This study recognizes the need for healthcare systems to understand the factors that affect the ability and willingness of volunteer health professionals to report to work during a health emergency. Public health agencies must specifically address the need to meet the anticipated surge of demand for syndromic surveillance, epidemiological investigation and mass prophylaxis for entire communities of at-risk individuals.

A. RESEARCH DESIGN

This study uses a non-experimental design with a survey tool to collect quantitative data on volunteers' ability and willingness to report to work with the Nassau County Department of Health. The questionnaire also asks for volunteers' perceptions of levels of disaster preparedness and the activities, barriers and supports they would recommend to improve the system's response.

The methodology includes several survey research steps. First, a survey instrument collected data consisting of 26 questions (Survey Tool Appendix A). The questions cover the respondents' demographic characteristics, ability and willingness to volunteer for work during various types of catastrophic events, barriers to ability and willingness. It also includes narrative responses regarding County preparedness priorities, and barriers and enablers to volunteering during public health emergencies. The survey was made available to all 324 Nassau County Department of Health Medical Reserve Corps (MRC) volunteer members as of July 20, 2006. MRC members are 18 years of age or older and speak English to the extent that they can communicate easily with other English speakers. The large majority of MRC volunteers are New York State licensed or certified health professionals, including: physicians, nurses, pharmacists, social workers, dentists, emergency medical technicians and veterinarians, while a small proportion are in the occupational category of non-health care professionals. All MRC members have literacy skills and can read at least at an 8th grade reading level. They meet the Nassau County Department of Health credentialing qualifications, including a check of current licensure and a criminal background assessment completed by the Nassau County Police Department.

Second, respondents were selected from a list of current MRC members. These members participated in this study by completing an anonymous survey on their ability and willingness to volunteer with the Nassau County Health Department during public health emergencies. Medical Reserve Corps members were contacted a total of three times between July 20, 2006 and September 15, 2006. On July 20, 2006, all MRC members who attended a MRC training meeting on that date were asked to complete the survey. The researcher introduced the purpose of the study and asked that MRC members complete and return the questionnaire in a sealed envelope at the end of the meeting. On August 1, 2006, and September 15, 2006, all MRC members received the survey by mail. The survey was mailed out on two separate occasions to maximize the return rate. The survey in the August 1, 2006, mailing included an introductory letter (Appendix B – August 1, 2006, Cover Letter) explaining that the survey was the same one that was distributed at the MRC meeting on July 20, 2006. The letter explained that only members who had not completed the survey in July should respond to this current request. Similarly, the letter (Appendix C – September 15, 2006, Cover Letter) accompanying the survey in the September 15, 2006, mailing explained the same thing. The letter explained that only members who had not completed the survey in July or August should respond to this final request.

Third, a first attempt to administer the questionnaires occurred during a MRC training meeting on July 20, 2006. At that meeting, the researcher announced that the surveys were available. MRC members who were interested in participating could take a survey packet from the registration table and either complete it at the meeting and deposit into a sealed box, or take it home to complete and mail it back in the pre-addressed, stamped envelope. MRC members were informed that participation in the survey was strictly voluntary, and that their participation or non-participation would in no way affect their membership status or role in the MRC. Sixty-eight MRC members attended the July 20, 2006 meeting. The researcher introduced, explained and distributed the survey, and MRC members either completed and returned it in sealed envelopes prior to leaving the meeting, or mailed it to the researcher following the meeting. Fifty-eight surveys were collected as a result of the July 20, 2006 MRC meeting.

Fourth, the researcher mailed each of the 324 MRC members a survey packet which contained a copy of the survey (Appendix A); a cover letter (Appendix B or C) which described the purpose of the survey and the procedure for its completion; and a return, self-addressed, postage paid envelope. MRC members were asked to complete the survey and return it in the enclosed envelope. Respondents were instructed NOT to place any personal identifying information on the survey. Ninety-five surveys were returned in response to the August 1, 2006, mailing. On September 15, 2006, the survey was mailed for the second time to all 324 MRC members with a cover letter explaining the purpose of the study and identifying the survey as the same one previously sent on August 1, 2006. The cover letter directed the recipients to complete and return the survey only if they had not done so in response to the previous requests on July 20, 2006, and August 1, 2006. Those who agreed to participate were asked to complete the survey and return it to the Health Department MRC Office in the enclosed postage paid envelope. Forty-five surveys were returned in response to the September 15, 2006, mailing.

B. DESCRIPTION OF SURVEY RESPONSE

Between July 20, 2006, and October 30, 2006, 198 completed surveys were received from a total of 324 Medical Reserve Corps members. Although a 61.1% survey response rate represents a reasonable return from a mail questionnaire, the first analytical step involves a comparison of the characteristics of the survey respondents to the total MRC population to check on whether the sample analysis adequately represents all 324 members.

Overall, those who answered the questionnaire are very similar to the total MRC population. Figure 1 below shows that the share of women and men in the sample nearly match the MRC as a whole. Approximately 65% of the 324 MRC members are men, compared to 62% of the sampled respondents. Figure 1 also shows that the average age of the total MRC population and the sample are virtually identical. The total population averages 55 years of age, while the average age of the survey respondents is 56 years of age.

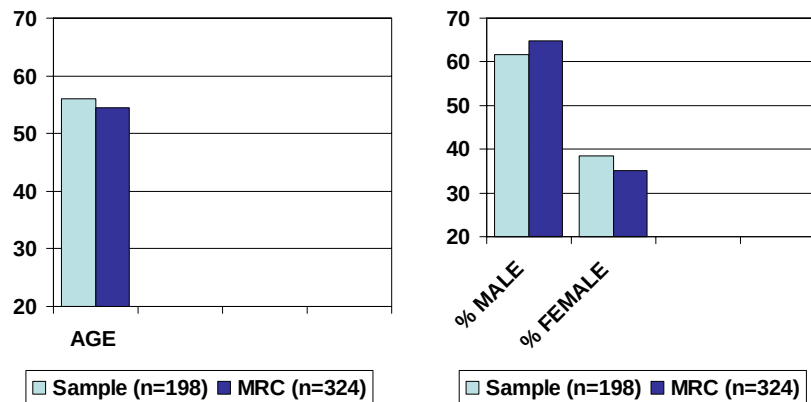


Figure 1. Comparison of Age and Sex of Survey Respondents to MRC Population

One source of potential difference between the sample and the total population may be occupation. Persons with very different time commitments in their daily routines often do not respond to surveys in like manner. In this survey, however, the occupational distribution of the sample compares very favorably with the total population. Figure II shows that, although the largest single occupational group in both the total population and the sample—physicians—are underrepresented in the survey, the difference is small. All other occupations are comparably included in the survey.

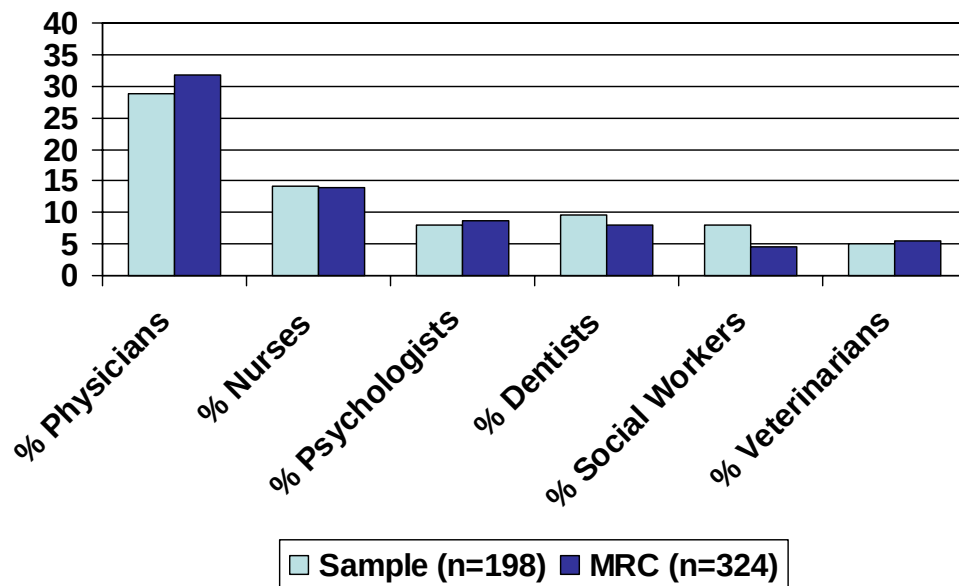


Figure 2. Comparison of the Most Frequent Primary Occupations of the Total MRC Population and the MRC Survey Respondents

Figures in Table 1 below provide a complete list of the occupational groups and their relative share in the MRC population and the sample. In addition to the relative distribution of these occupational groups, these figures also show the significant heterogeneity of the volunteers responding to the survey. Although one-third of the respondents are physicians, the rest of the group involves other professional specialties who play a different role in an emergency response and possess various levels of skill and experience. This diversity offers an opportunity in the following analyses to examine potential sources of influence on how various skill groups respond during an emergency event.

	% of Total Population (n=324)	MRC % of MRC Sample (n=198)	Survey
Physician	31.8	28.8	
Nurse	13.9	14.1	
Psychologist	8.6	8.1	
Dentist	8.0	9.6	
Social Worker	4.6	8.1	
Veterinarian	5.6	5.1	
Physician Assistant	1.5	2.0	
Nurse Practitioner	1.9	2.5	
Pharmacist	2.2	3.0	

Table 1. Occupational Distribution

The following analysis relies on a survey sample that is clearly representative of the total MRC population in the Nassau County Department of Health. The results, therefore, provide accurate indications of the characteristics of MRC volunteers who will or will not be willing and able to respond to various types of emergency events. They should also provide emergency planners with valuable insights into whom they may rely on to respond during an emergency and how they might help increase and ensure an adequate level of participation.

IV. ANALYSIS OF FINDINGS

This chapter examines the willingness and ability of volunteers in Nassau County to serve during an emergency through the eyes of those who responded to the survey. As noted in the last chapter, these survey respondents are strongly representative of the total group of MRC members. Therefore, the analysis represents a unique portrait of a county's volunteers' views on their own preparation to serve, and the county's general preparedness in case of a medical crisis. During the survey, these volunteers had an opportunity to offer their views on how well various special populations in the county were prepared to face a medical emergency.

This sample population consists of a group of professional healthcare providers who had volunteered with the county health department MRC prior to agreeing to complete this survey on ability and willingness. These individuals are a group of volunteers who had already agreed to membership in the MRC and publicly committed to volunteering. The respondents in this survey vary significantly from spontaneous unidentified volunteers who respond to an incident scene on an impromptu basis and offer their assistance. The MRC volunteers are openly identified as volunteers in their community.

A. WHO ARE THESE VOLUNTEERS?

A majority of these volunteers are married and living with at least one person in their household. More than three fourths (76.7%) of the respondents say they were married; 14% are divorced or separated, and 9.3% report they are single. Survey respondents average approximately three persons living in their household (2.88). A small share (11%) lives alone.

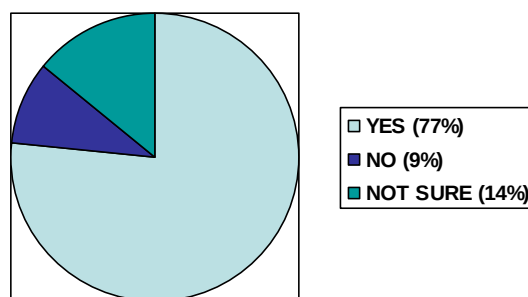
The majority of the group is also active in the labor force. Although not surprising given their average age of 56 years, almost 70% of survey respondents (69.7%) report that they are currently employed on a full time basis. Another sixteen percent work part time (15.7%). Only roughly one in ten volunteers (14.6%) say they were not currently employed at the time of the survey. The group's commitment to the labor force is also steady. Approximately half (53.3%) of the respondents work during

the week and approximately half (53.8%) indicate they work both on weekends and weekdays. Sixty percent of the respondents (61.1%) report that they work more than 8 hours per day, while 32.3% report working between 4 to 8 hours daily. When asked to indicate the times of day they usually work, 81% report work during the daytime, 33% work evenings and 12% report working night hours.

Any obligations to their jobs that might influence their willingness and ability to serve during an emergency are not the only source of potential barriers to participation. Well over half have some form of household social obligation. Approximately 40% of the respondents indicate a responsibility to care for children (38.4%). One of every five (19.2%) note a responsibility for the care of elders either in their home or nearby, and almost half have pets (40.9%).

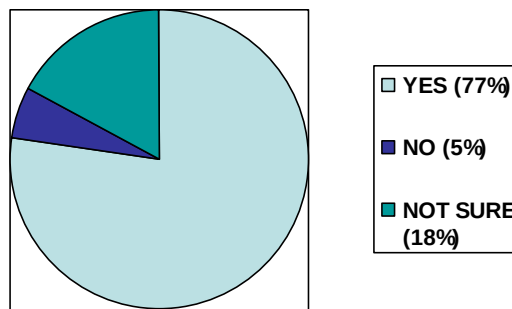
These apparent family and household obligations, however, are not necessarily insurmountable. The survey asked the respondents three questions to elicit information on whether they would have help available for these responsibilities. The first question asked if other people are available to care for the respondent's responsibilities in their absence. More than three-quarters of the respondents (77%) indicate that others could take care of their responsibilities in their absence. Figure 3 below also shows that when asked, "Do you have other people available who could take care of these responsibilities for you in your absence?" over one in five say they do not or are not sure. The potential for a significant share of these volunteers not responding during an emergency is clearly a possibility.

Figure 3. Availability of Help with Responsibilities during an Absence



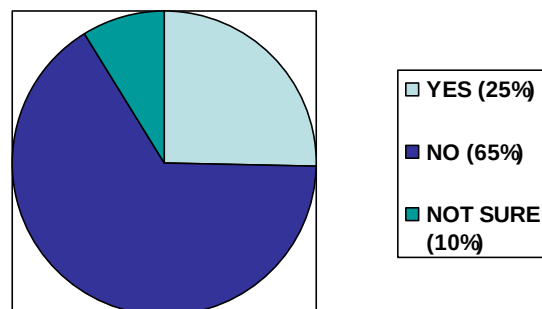
The second question asked if other people are available to assume the respondent's responsibilities in their absence during an emergency. Again, more than three-quarters of the respondents (77%) indicate that others could assume their responsibilities in their absence during an emergency. Figure 4 presents a summary of responses to the question, "Do you have other people available who could take care of these responsibilities in your absence during an emergency?"

Figure 4. Availability of Help with Responsibilities during an Emergency



The third question addresses help with responsibilities if the respondent's spouse or partner has to report to their work during an emergency. About two-thirds of the respondents (65%) indicate that their spouse or partner does not have to report to work during an emergency. Figure 5 presents a summary of responses to the question, "Does your spouse or partner have to report to work during emergencies?" Once again, a significant minority—in this case almost one-third of the respondents—suggests that other obligations might inhibit their response to an emergency even when they were willing and able to volunteer.

Figure 5. Work Responsibility for Spouse during an Emergency



Overall, county volunteers are both routinely committed to the labor market and their jobs and have extensive responsibilities in their households. Yet more than three quarters also report that they have assistance with those responsibilities if and when they are absent during an emergency situation. A potentially critical issue for these volunteers might be, however, that this anticipated assistance would come from a partner or spouse in the same household. Depending on household members to support an MRC volunteer may broaden the range of concerns. Are the MRC volunteers willing to serve in a medical crisis without assurances that their household partner or spouse or more general obligations are secure?

B. ABILITY AND WILLINGNESS

The research literature on volunteers strongly suggests that people volunteer because of needs and motives that are important to them. The volunteer activity must fulfill those needs to ensure sustainability of the volunteer effort.³³ MRC members are a group of volunteers who have previously agreed to membership in this Health Department sponsored organization. This type of volunteer is significantly different than the spontaneous unaffiliated volunteer who appears at the scene of an emergency and is then incorporated in the response. Few studies address the motivations and behaviors of pre-identified professional volunteers in predicting their response to public health emergencies where there is a threat of illness for both the volunteer and their families who reside in the affected community.

The respondents were presented with a series of six situations and asked to respond about their ability to respond and their willingness to respond. The respondent chose from three options regarding ability and three options regarding willingness. The options are willing to volunteer, not willing to volunteer and not sure. The survey tool defines ability as capability, i.e. do they have the means and resources to volunteer. Willingness is described as a personal decision, i.e. an intention to volunteer. These situations are described in the survey tool as follows:

³³E. Gil Clary, Mark Snyder, Robert D. Ridge, Peter K Miene and Julie A. Haugen, "Matching Messages to Motives in Persuasion: A Functional Approach to Promoting Volunteerism," *Journal of Applied Social Psychology* 24 (1994): 1129–1130.

1. Routine annual influenza programs suspended due to vaccine shortage. Points of Distribution (PODs) need to be staffed with MRC to rapidly administer available vaccine to thousands of citizens.
2. Smallpox outbreak in Nassau County. 200 patients admitted to 10 hospitals. DOH to establish Smallpox vaccination PODs with MRC.
3. A Category 3 hurricane results in the evacuation of all residents south of Sunrise Highway. MRC is needed to provide care for individuals in a special needs shelter operated by the Health Department.
4. Confirmed nerve agent release in Roosevelt Field Mall. MRC asked to assist with patient triage at local hospital emergency departments.
5. Radioactive explosive device (dirty bomb) detonated at Jones Beach Marine Theatre. MRC asked to assist answering calls at telephone center for the thousands of residents who are calling the Health Department for direction.
6. Six confirmed cases of H5N1 (Avian) Influenza in NYC. One suspect case in Nassau. Nassau to distribute antivirals to identified at-risk populations with assistance of MRC.

The responses are divided into two categories. The first category is the single positive response of “able or willing to volunteer.” The second category includes both “not willing” and “not sure” as “not able or willing.” The findings of these questions indicate that approximately 80% of the MRC volunteers surveyed are both willing and able to respond to assist in public health emergencies. Figure 6 displays the respondents’ report of their ability and willingness to respond in the six situations described.

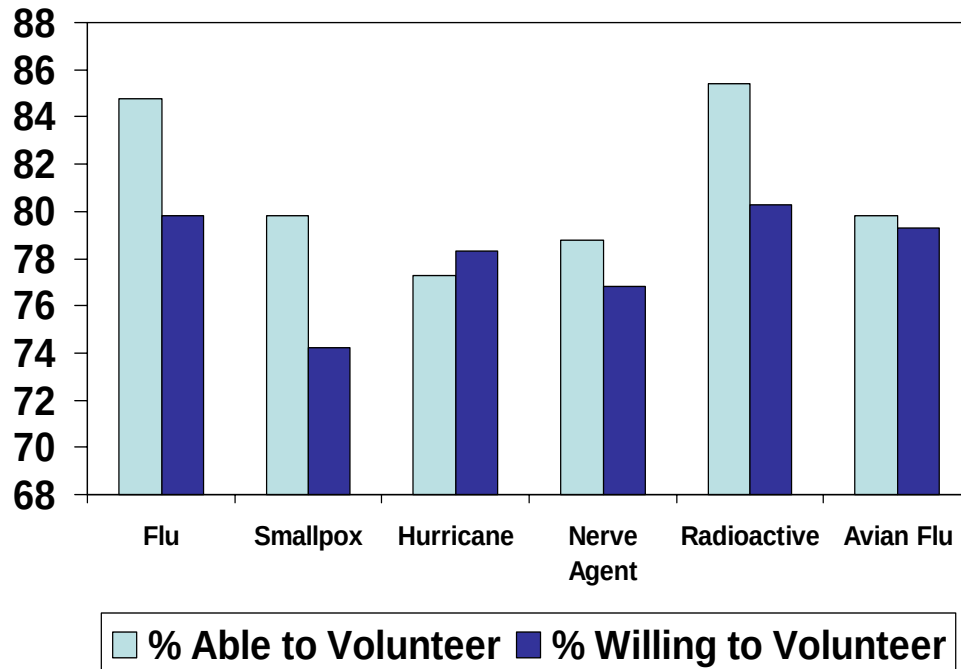


Figure 6. Ability and Willingness to Respond to Specific Public Health Emergencies

A similar response was obtained to the questions regarding concern of personal exposure to a chemical agent or a biological agent while working as an MRC volunteer. Almost ninety percent (86%) of the respondents report they were either not at all concerned (29%) or only moderately concerned (57%) about exposure to chemical or biological agents.

C. PERCEPTION OF SIGNIFICANCE OF ROLE IN ORGANIZATION RESPONSE

Previous research suggests that paid healthcare workers are more or less willing to volunteer during an emergency depending on their own perceptions of the importance their contribution would make to the overall response effort. These Nassau MRC volunteers were asked a similar question. They rate the significance of their role as an MRC volunteer in the overall health department response to emergencies. More than 90% of the respondents report their role as either moderately or highly significant. Figure 7 displays the reported significance of the respondents' role as MRC volunteers in the health department emergency response.

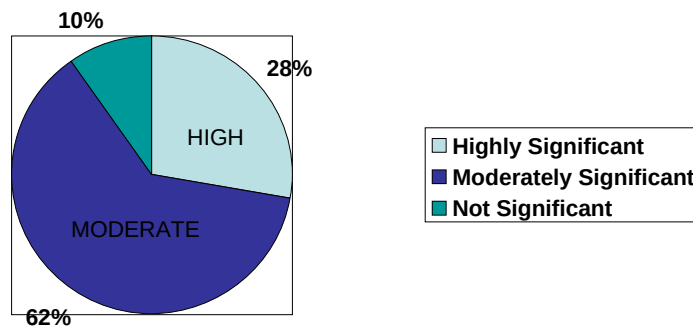


Figure 7. Perception of Significance of Role in Organization Response

Respondents specify their availability if they are able and willing to volunteer, or not sure if they can volunteer. Volunteer availability is high. Seventy percent of the respondents (69.9%) indicate they are available both on weekdays and weekends and about seventy percent state they are available for daytime (73.7%) and evening (69.7%) assignments. More than half (51%) of the respondents are willing to work at night.

D. BARRIERS TO ABILITY

The survey identifies six possible barriers to the ability to respond and instructed the respondents to rate the importance of those barriers if they were not able or unsure about volunteering during a public health emergency. The six barriers include child care, lack of training, elder care, personal health problems, pet care obligations and other job commitments. Over one third of the respondents (34.5%) indicate that other job commitments represent an important barrier to their ability to respond. More than forty percent (42.4%) of respondents also rate lack of training as a moderately important barrier to response ability. These job requirements stand in stark contrast to the social obligations that previous research suggests could be primary obstacles to emergency response. For instance, approximately seventy percent of all respondents report that child care (72.3%) is not an important barrier to their ability to respond during an emergency. Obligations related to elder care (76.5%), personal health (69.9%), and pet care (73.4%) also are not rated as important barriers. Figure 8 shows the full variability among these respondents in rating barriers to emergency response.

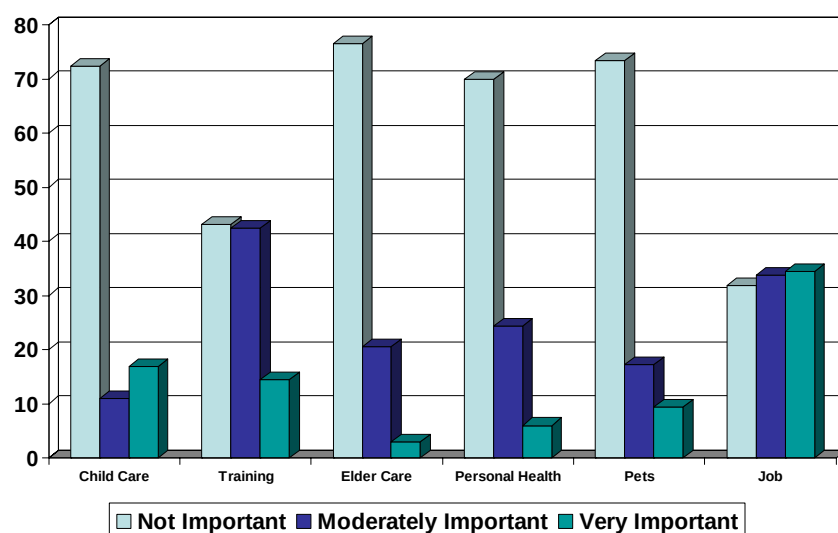


Figure 8. Reasons MRC Members May be *Not Able or Not Sure* about Volunteering during a Public Health Emergency

A second question on ability asked the respondent to briefly describe what would need to change to make it possible to volunteer if they are not able or not sure about volunteering during a public health emergency. Of those who are not able, forty percent (39.3%) indicate a change was necessary regarding the safety and health for themselves and their families, and thirty five percent (34.4%) state a change was needed regarding their work coverage. Unsuitable training (14.8%), competing commitments (6.6%) and pets (4.9%) are also identified but much less significant as obstacles to ability.

E. BARRIERS TO WILLINGNESS

According to Qureshi,³⁴ willingness to volunteer is a separate dimension of a person's decision-making process. It reflects a personal decision based on motivation or intention to volunteer. This survey of MRC volunteers identifies four barriers to willingness to respond and instructed the respondents to rate the importance of those barriers if they are not willing or unsure about volunteering during a public health emergency. The four barriers identified are concern for personal health and safety, lack of personal protective equipment, concern for health of family members and lack of information regarding risk.

³⁴ Qureshi, Gershon, and Sherman, "Health Care Workers' Willingness and Ability to Report to Duty During Catastrophic Disasters."

Sixty percent (59.1%) of the respondents rate personal health and safety concerns as moderately important, while the three other concerns are rated by half of the respondents as very important reasons they were not willing or not sure about volunteering during a public health emergency. The three concerns rated as very important by the respondents are lack of personal protective equipment (46.2%), family member health concerns (50%) and lack of information on risk (46.9%). Perhaps the most significant finding regarding these barriers to willingness is that eighty percent of all respondents rate all four areas of concern as moderately or very important. Apparently, these respondents possess a global concern about the potential impact of issues beyond their own control that may affect their willingness to respond. Figure 9 presents the responses to the question on reasons MRC members may be not willing or not sure about volunteering during a public health emergency.

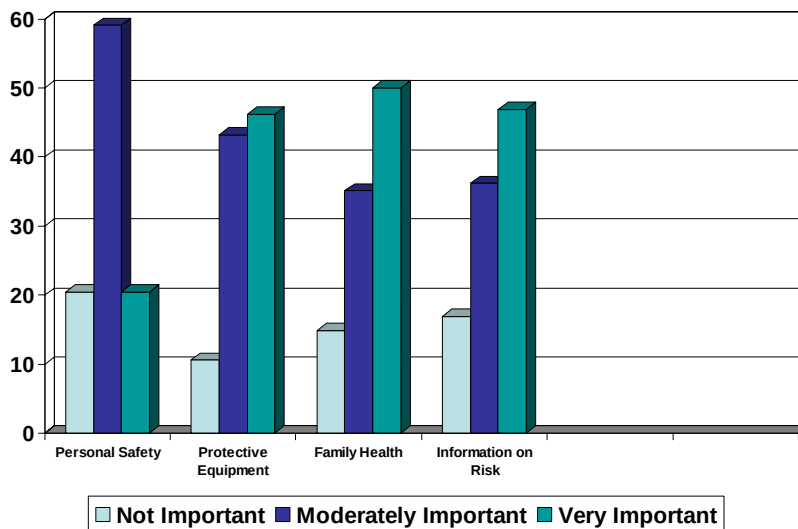


Figure 9. Reasons MRC members May be *Not Willing or Not Sure* about Volunteering during a Public Health Emergency

F. LEVEL OF PREPAREDNESS

Preparedness, at both a community and an individual level, is difficult to define and measure. Homeland Security Presidential Directive 8 (HSPD-8) defines preparedness as “the existence of plans, procedures, policies, training, and equipment

necessary at the Federal, State, and local level to maximize the ability to prevent, respond to, and recover from major events.”³⁵ HSPD-8 mandates developing a national domestic all-hazards preparedness goal utilizing a capabilities-based planning approach. The Interim National Preparedness Goal identifies strengthening medical surge and mass prophylaxis capabilities as one of the seven national priorities.³⁶

Elsewhere, preparedness is described as both a process and an effect. The process of preparedness provides all partners with the opportunity to collaborate on strategies that contribute to a collective operational readiness. As an effect, it contributes to both risk reduction (mitigation) and operational effectiveness through planning, training, equipping, exercising and evaluating the ability to prevent, protect from, respond to or recover from emergency events.³⁷

Ten indicators evaluate state level public health preparedness. These include the following: ability to accept and distribute the Strategic National Stockpile; laboratory capacity; availability of lab scientists and nurses; capability for influenza surveillance; hospital bed surge capacity; percent of population receiving vaccinations for influenza and pneumonia; health information technology; and the status of the budget for public health.³⁸ These preparedness effects can also be understood as measures of risk reduction and operational effectiveness such as baseline readiness (percent of population receiving vaccinations for influenza and pneumonia); resources (budget, laboratory capacity, hospital bed surge capacity); planning (capability for influenza surveillance, health information technology); and training (availability of lab scientists and nurses, ability to accept and distribute the Strategic National Stockpile).

³⁵ Weekly Compilation of Presidential Documents, *Directive on National Preparedness: Homeland Security Presidential Directive/HSPD-8*, no. 51 (December 22, 2003): 1822, <http://www.ojp.usdoj.gov/odp/assessments/hspd8.htm> [Accessed February 3, 2007].

³⁶ United States Department of Homeland Security, *Interim National Preparedness Goal: Homeland Security Presidential Directive 8: National Preparedness* (March 31, 2005), http://www.ojp.usdoj.gov/odp/docs/InterimNationalPreparednessGoal_03-31-05_1.pdf [Accessed February 2, 2007].

³⁷ U.S. Senate Committee on Environment and Public Works, *A Hearing on the Stafford Act: A Path Forward for the Nation's Emergency Preparedness and Response System*, http://epw.senate.gov/hearing_statements.cfm?id=259735 [Accessed July 7, 2006].

³⁸ Trust for America's Health, *Ready or Not? Protecting the Public's Health from Diseases, Disasters and Bioterrorism* (December 2006), <http://healthamericans.org/reports/bioterror06/BioTerrorReport2006.pdf> [Accessed December 24, 2006].

At the community level, as yet no standard benchmarks exist to evaluate a level of emergency preparedness, nor is there a generally accepted definition of the term. In designing the survey for this study of MRC volunteers, questions on preparedness are intended to identify the MRC member's own perceptions of preparedness and to evaluate the effect of those perceptions on opinions about their own likely behavior and the conditions facing the larger community.

For example, the MRC respondents evaluate the level of emergency preparedness in their communities and for specific subgroups using a 5-point scale ranging from unprepared to very prepared. The respondents rate the level of preparation of their county, community and family. Approximately half of the respondents rank the county (53.6%), their community (49.4%) and their own family (47.6%) as somewhat prepared, which is below a rating of prepared. The ranking of the respondent's local community is consistently lower than that of their county or their family at all levels of preparedness. Figure 10 presents the responses to the perceived level of preparedness in county, community and family groups.

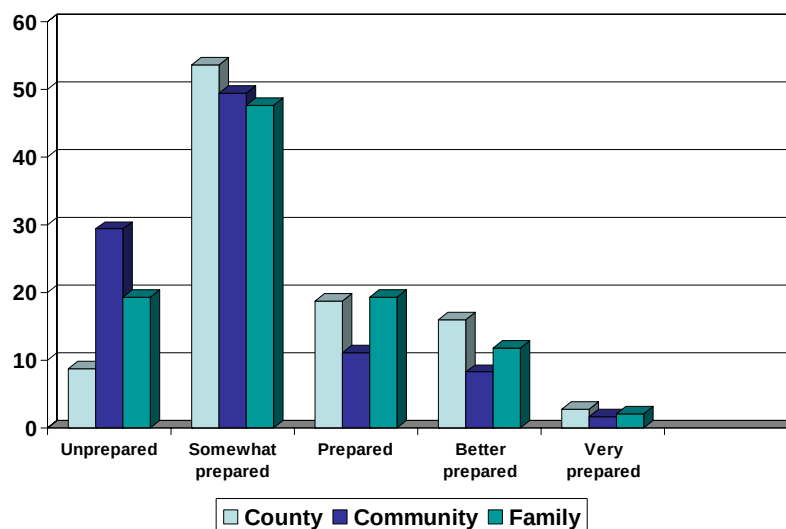


Figure 10. Perceived Level of Preparedness in County, Community and Family

The respondents then rate the level of preparation for a public health emergency such as Hurricane Katrina for ten groups of people. The ten groups includes the following: county leaders and politicians; local first responders; local voluntary organizations; low income groups; high income groups; elderly; hospitals; persons with pets; homeless; and non-English speakers.

In general, most respondents rank all groups as less than prepared. More than seventy percent of the respondents rate four groups of people as totally unprepared. These groups include the low income (76.5%), the elderly (71.7%), the non-English speakers (76.4%) and the homeless (91.9%). Half of the respondents report that the high income (55.1%) and the leaders/politicians (50.3%) are somewhat prepared. All other groups receive a lower rating in this category. Groups receiving the highest percentages for being prepared are the first responders (27.4%), volunteer organizations (29.8%) and the hospitals (30.3%). Figure 11 displays the ranking of levels of preparedness in the ten groups of people.

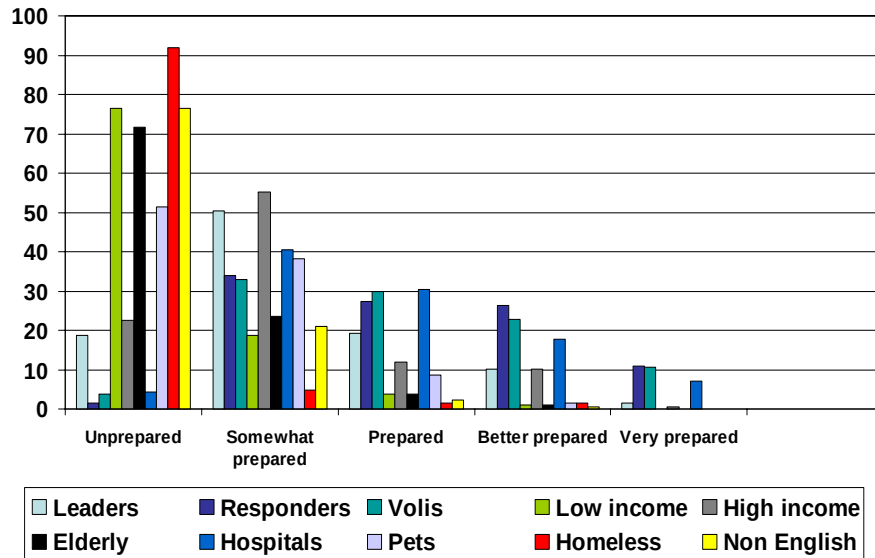


Figure 11. Perceived Level of Preparedness in Specific Groups

G. PRIORITIES TO IMPROVE PREPAREDNESS

Respondents then list, in priority order, the five steps that local officials should take to improve the County's preparedness for a public health emergency. Respondents were instructed to list the most important step as Priority #1. Public education and awareness is the most important priority for preparedness. Half of the respondents (50.7%) identify public awareness and education as the first priority for local officials. If not the first priority, public awareness and education are ranked by the others as one of the next two or three highest priorities. Figure 12 identifies all improvement responses by priority.

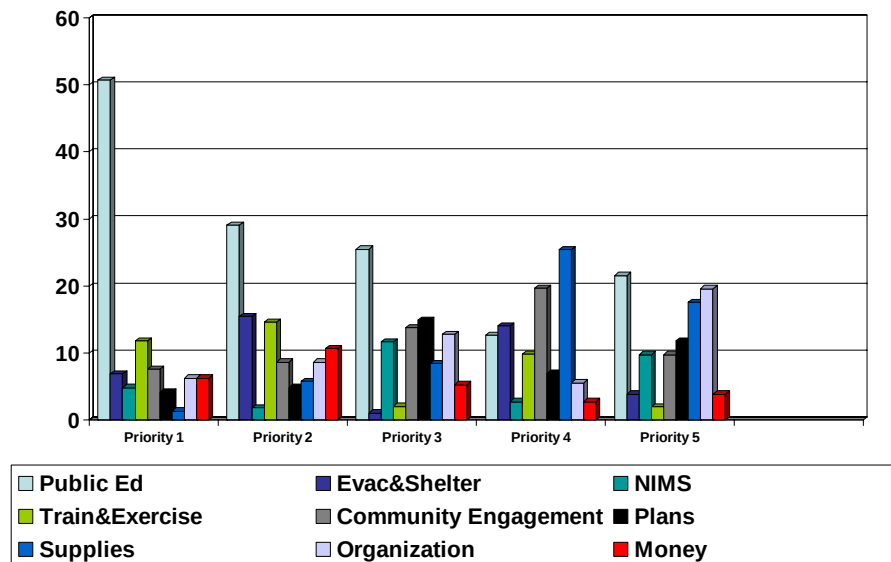


Figure 12. Priority Improvements in Preparedness

H. BARRIERS TO RESPONSE

The respondent wrote brief phrases describing the two most significant barriers or problems preventing them from fulfilling their job requirements during a disaster. This question is different than the previous questions on barriers to ability and barriers to willingness. The question does not distinguish between ability and willingness constructs. Rather, the question asks about fulfilling job requirements rather than reporting to work, and the respondent wrote responses without the prompting of answers in a multiple choice question.

The eight barriers the respondents identify follow the same order of frequency in both positions. Family responsibilities and family safety rank as the highest barrier (28.1%, 27.7%), followed by employment (20.3%, 22.3%) and personal health (19.5%, 18.8%). The fourth most frequently identified barrier, travel and access (18.8%, 13.4%), ranks close to the top three barriers. These four barriers are identified more than three times as frequently as the remaining four barriers. Figure 13 identifies these barriers to fulfilling job requirements during a disaster.

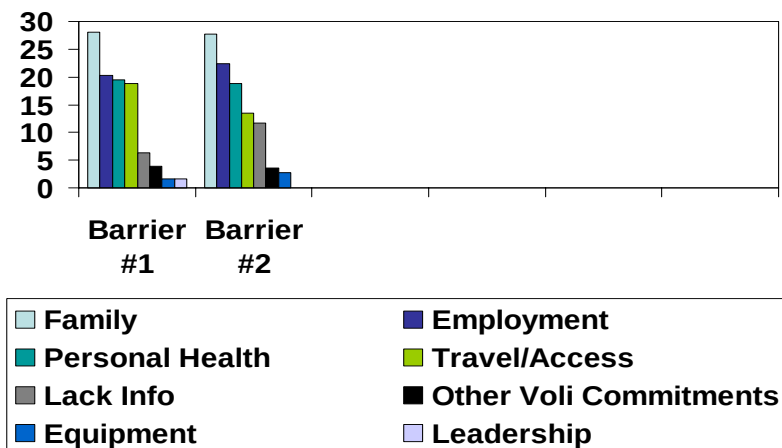


Figure 13. Barriers to Fulfilling Job Requirements During a Disaster

I. ENABLERS FOR RESPONSE

These volunteers also wrote brief phrases describing the two most significant factors that would assist them in fulfilling their job requirements during a disaster. The eleven enablers the respondents identify follow the same order of frequency in both positions for the three highest rated items. Assurance that their family would be cared for (27.5%, 28.1%) is rated most important in both positions and is rated at a significantly higher percentage than all other issues. Adequate training (16.2%, 20.2%) and resolution of employment-related conflicts (13.4%, 18%) are ranked as second and third respectively.

In the first position, communication (14.1%) and access/transportation issues (12%) are ranked forth and fifth, and in the second position equipment (12.4%) and communication (5.6%) are ranked as fourth and fifth. Skills, plans and awareness are consistently ranked as the least frequent issues. Figure 14 describes the enablers to fulfilling job requirements during a disaster.

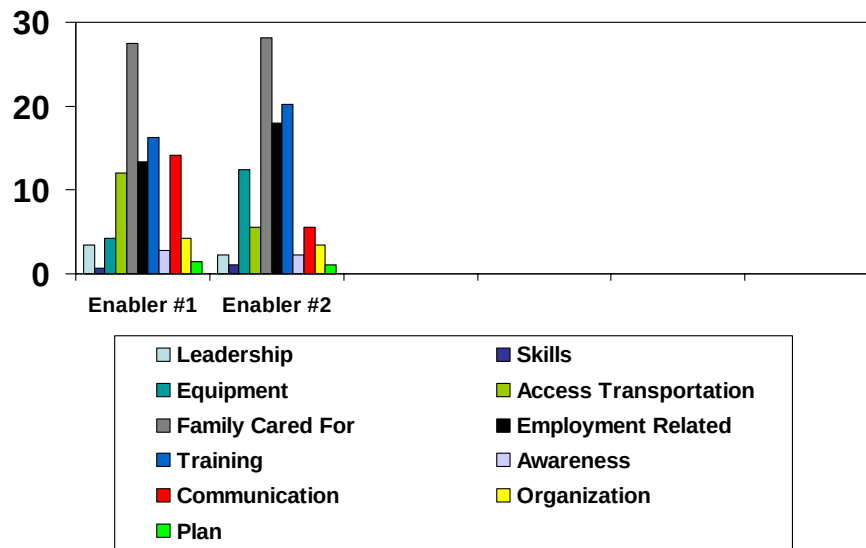


Figure 14. Enablers to Fulfilling Job Requirements During a Disaster

These responses demonstrate that MRC volunteers are both like and unlike other paid healthcare professionals. They are exceptionally willing and able to report to work during emergencies, but at the same time also face significant barriers. In general these medical volunteers are older, married, still working full time and have significant social responsibilities.

More than one third state that their work commitments and lack of training represent important barriers to their ability to respond, as compared to the social obligations that previous research reports as a primary obstacle. Perhaps most importantly, unlike paid public health professionals, MRC volunteers identify their roles as being significant in assisting the health department during an emergency.

Quite similar to other studies, respondents are almost universally concerned about personal health and safety, personal protective equipment, family health and lack of information on risk as possibly affecting their willingness to respond. Most MRC members feel that community groups are less than adequately prepared and they identify improvement in public awareness and education as the most important priorities for the county to overcome these barriers.

These MRC volunteers demonstrate that, even with the high degree of commitment overall, significant variability exists in ability and willingness to respond. Therefore, the task of managing the MRC volunteers deals with the diversity and all that means to get the right people to the right place.

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V. DISCUSSION

A. INTRODUCTION

The most recent research on ability and willingness of paid healthcare workers to report to work during events that affect the public health reveals serious concern that a significant percentage of these individuals may perceive the risks of the event and their personal roles and capabilities as prohibitive. Three studies of ability and willingness were done in the United States in 2005. Qureshi's survey of 6,428 health care workers in the New York City area found that only about half would report to work in a smallpox event.³⁹ Crane's survey of Florida healthcare providers demonstrated that only 32% of the 2,279 respondents were both competent and willing to respond to a bioterrorism event.⁴⁰ The Johns Hopkins Center for Public Health Preparedness survey of 308 employees at three health departments in Maryland found that nearly half of the local health department workers are likely not to report to duty during a pandemic.⁴¹

The survey conducted for this study focuses on a different population—the 324 members of the Nassau County Department of Health MRC. Drawing on the previous studies noted above, it focuses on ability and willingness as two separate constructs. Respondents identify their intentions to voluntarily respond with the health department during a public health emergency and rate the significance of their role in fulfilling the health department responsibilities during a disaster. Respondents identify and prioritize the five steps that local officials should take to improve the county's preparedness for a public health emergency; lists the two most significant barriers preventing them from fulfilling their job requirements during a disaster; and write down the two most significant factors that would assist them in fulfilling their job requirements during a disaster.

³⁹ Qureshi, Gershon, and Sherman, "Health Care Workers' Willingness and Ability to Report to Duty during Catastrophic Disasters."

⁴⁰ Crane, "Assessment of the Community Healthcare Providers' Ability and Willingness to Respond to a Bioterrorist Attack in Florida."

⁴¹ Balicer, Omer, Barnett, and Everly, "Local Public Health Workers' Perceptions Toward Responding to an Influenza Pandemic."

Nassau County volunteers, according to this survey, are generally well prepared and willing to serve during an emergency. They also think they play an important role in the health department response. Unfortunately, these knowledgeable medical professionals also believe that many groups and communities in the county are significantly unprepared for an emergency.

It is important to recognize that this sample population consists of a group of professional healthcare providers who had volunteered with the county health department MRC prior to completing this survey on ability and willingness. What impact their professional and volunteer status would have on their actual behavior at the time of an emergency, and how their behavior might differ from other volunteers, represent the key questions for the remainder of this analysis.

B. RECAP OF SURVEY FINDINGS

The survey findings identify important demographic information on this group of volunteer health care professionals and also demonstrate some significant differences between MRC volunteers and paid health care workers. The average age of the MRC volunteer in this study is 54.5 years, almost ten years older than the national averages. In the United States, the average age of registered nurses was 46.8 years of age in March 2004, up from 45.2 in 2000.⁴² The average age of physicians was 45.7 years.⁴³

Three-fourths of the MRC study group report they are currently married. Seventy percent work full time, and sixty percent report working more than eight hours every day. Forty percent of the MRC respondents are responsible for children, forty percent are responsible for pets and twenty percent are responsible for an elder person.

MRC members who are able and willing to volunteer are also readily available. Volunteer availability in this group is high. Seventy percent of the respondents report that they are available for assignments on both weekdays and weekends, during the daytime and during the evenings; over half are willing to work at night. These Nassau

⁴² U.S. Department of Health and Human Services Health Resources and Services Administration, *Preliminary Findings: 2004 National Sample Survey of Registered Nurses* (March, 2004), <http://bhpr.hrsa.gov/healthworkforce/reports/rnpopulation/preliminaryfindings.htm> [Accessed January 19, 2007].

⁴³ North Carolina Health Professions Data System and Southeast Regional Center for Health Workforce Studies, *2005 North Carolina Physicians: Factsheets* (October 2005), <http://www.shepscenter.unc.edu/hp/FactSheets/MDTrainFS03.pdf> [Accessed January 19, 2007].

County volunteers are a group of older health professionals who continue full time employment and have both significant responsibilities at home and significant assistance with these responsibilities in their absence.

1. Ability and Willingness to Report to Work

The MRC volunteers' ability and high personal willingness to volunteer is significantly higher than the results from several studies of paid healthcare workers, suggesting that nearly half are likely not to report to duty during a catastrophic public health emergency.⁴⁴ Approximately three-fourths of all MRC survey respondents indicate both an ability and willingness to volunteer in all six types of emergencies situations described.

In general, this sampled group appears more organized and motivated to volunteer, perhaps resulting from the fact that they volunteer in the MRC and consequently have more available resources than the general population of health professionals. MRC groups are, in essence, "privileged" groups of individuals who indicate a high ability and willingness to respond in spite of significant barriers and concerns.

2. Comparison of Perception of Role Significance between Paid and Volunteer Healthcare Professionals

Volunteers' perceptions of how useful they are to the response of the health department sharply influence how they behave even if, in general, they say they are able and willing to become involved. These survey respondents are unlike the population studied in most previous studies of the ability and willingness of people to volunteer during an emergency. This group expresses a very high level of ability and willingness, reaching a full 75% of the group. What, then, if anything, differentiates those who would respond during an actual event from those who would or could not?

MRC volunteers' perception of the importance of their role in the health department's overall response is far greater than that of the paid public health staff in the

⁴⁴ DiMaggio, Markenson, Fareri, Loo, and Redlener, "The Willingness of U.S. Emergency Medical Technicians to Respond to Terrorist Incidents ." Qureshi, Gershon, and Sherman, "Health Care Workers' Willingness and Ability to Report to Duty during Catastrophic Disasters." Shapira et al, "Willingness of Staff to Report to Their Hospital Duties Following an Unconventional Missile Attack: A State-Wide Survey." Alexander and Wynia, "Ready and Willing? Physicians' Sense of Preparedness for Bioterrorism." Crane, "Assessment of the Community Healthcare Providers' Ability and Willingness to Respond to a Bioterrorist Attack in Florida." Gullion, "School Nurses as Volunteers in a Bioterrorism Event."

Johns Hopkins study. Ninety percent (90%) of the MRC volunteers report they play a moderately or highly significant role in the county health department's emergency response, indicating a high degree of engagement and motivation. This response is substantially greater than the response of paid county health department employees who answered the identical question in the 2005 Johns Hopkins survey. In the Johns Hopkins study, sixty percent (62%) of the paid employees in the three county health departments in Maryland report that they play a significant role in the agency's overall response. The likelihood of reporting to duty is significantly greater for clinical than technical and support staff and perception of the importance of one's role in the agency's overall response is the single most influential factor associated with willingness to report.⁴⁵

In the Hopkins study, researchers document a ten-fold increase in reported ability and willingness to volunteer among those who perceive their role in the emergency response plan to be very or moderately important. In this MRC sample of persons already registered to volunteer in case of an emergency, their perceived role in the Health Department response plan also makes a strong difference.

Those who do not feel their role is very important are much less likely to volunteer than those who think they are very important. When asked about their ability to respond to a hurricane, for instance, nearly 90 percent (86.8%) of those who believed they have an important role in the Health Department's plan say they would volunteer. Those who consider their role insignificant are 20 percentage points (68.4%) less likely to respond during a hurricane.

Figures in Table 2 show the variation of these volunteers' views toward emergency preparedness depending on whether they think their role in the emergency plan is high, moderate or not significant. In a similar pattern to the hurricane situation described above, volunteers who think their role is very important are nearly four times more likely not to be deterred from responding because of concern over a chemical agent attack. They are also roughly half less likely as those who believe their role in the county plan to be insignificant to consider any challenge to their personal health as a reason for not responding.

⁴⁵ Balicer, Omer, Barnett, and Everly, "Local Public Health Workers' Perceptions Towards Responding to an Influenza Pandemic."

One likely reason for these differences relates to the perception of the significance of their role. Those who believe their role is very important in an emergency do not think that training or skills is important to their volunteering: 68.6% report that training would not be a very significant inhibitor to their participation. In contrast, those feeling their role is insignificant feel job training is important. When asked directly if job commitments would impede their ability to serve, over half (52.6%) of those with insignificant roles think that their jobs would have a very important influence, compared to less than a third (30.6%) of those with confidence that their position in the emergency response plan is highly significant.

MRC volunteers confident in their own role also express more confidence in the preparedness of others. Respondents who believe that their role in the Health Department's response is highly significant are also much more likely to consider the county prepared and even well prepared than those with perceptions of a less significant role.

Variable	Not Significant Role	Moderately Significant Role	Highly Significant Role	Total
% able to volunteer during a hurricane	68.4	78.8	86.8	80.0
% Not Concerned about a Chemical Attack	10.5	25.6	43.4	29.0
% Believe Training is NOT a Barrier	31.6	34.5	68.6	42.8
% Job Requirements were Barrier	40.0	36.1	26.7	34.4
% Family and Personal Health a Concern	20.0	44.4	40.0	39.3
% Thought County was Prepared	11.2	18.0	31.4	21.1

Table 2. Perceived Role Significance and Indicators of Preparedness

As the figures in Table 5 show, role significance appears to be a powerful predictor of willingness to report to duty. Public health organizations must address role significance to improve the reliability of emergency response. Volunteer health professionals may come to the organization with a preconception of the importance of their role and is clearly demonstrated in their response to the question of the level of preparedness in the county. The importance of the role of the MRC member in the health department's ability to fulfill their mission must be clearly stated and repeatedly demonstrated to the volunteer to sustain their willingness to report.

C. RISK PERCEPTION MODIFIERS

The Johns Hopkins study concludes that the perceived risk among public health workers is associated with several factors peripheral to the actual hazard of the event. These risk perception modifiers include knowledge gaps, ambiguity regarding one's exact tasks and questionable ability in performing one's role as risk communicator. The risk perception modifiers are all significantly associated with a higher perceived personal risk and a two- to ten-fold decrease in willingness to report to duty. These risk perception factors prove even more influential than the perceived level of family ability to function in one's absence.⁴⁶

The MRC study group documents some of the same risk perception modifiers. The survey identifies six potential barriers to respond and instructed the respondents to indicate and rate the importance of those barriers if they were unable or unsure about volunteering during a public health emergency. The respondents identify other job commitments and lack of training as most crucial. The survey also identifies four potential barriers to willingness to respond which include concern for personal health and safety, lack of personal protective equipment, concern for health of family members and lack of information regarding risk. Eighty percent of the respondents rate all four of these barriers as moderately or very important. If these risk perception modifiers result in a perception of increased risk and consequent decreased willingness to report to work, the MRC respondents in this study may be less willing than they recognize and report in the survey.

D. RESPONSE BARRIERS AND ENABLERS

The significant difference between volunteer and paid health professionals in their ability and willingness to report to work was not evident when the respondents specified issues that may interfere with reporting to work. One of the most interesting findings of this research is that although MRC volunteers are far more likely than paid health professionals to indicate they are able and willing to respond to public health disasters, their answers become quite similar to the responses of the paid workers in the other studies when they are asked to identify barriers to ability, willingness and response. For

⁴⁶ Balicer, Omer, Barnett, and Everly, "Local Public Health Workers' Perceptions Towards Responding to an Influenza Pandemic."

example, respondents indicate that the three most significant barriers preventing them from fulfilling their job requirements during a disaster are family responsibilities, travel, and personal safety and health.

A crucial characteristic of these highly motivated and able volunteers, however, is the considerable variation within the group in terms of their interests and concerns. Their similarity to paid health professionals in identifying barriers suggests that this variation may also be an essential feature of all who are sought to respond to an emergency.

The men in the MRC sample, for instance, report a much higher level of concern over the possibilities of a terror attack than did their female counterparts. Men are almost twice as likely as women to express their concerns. Similarly, a greater share of men (14.2%) than women (8%) in this group expresses concern about the possibilities of contracting a disease while responding to a biological event. Men are also more likely than the female volunteers to worry about their personal health while involved in an emergency response. In a biological emergency scenario, men tend to be more concerned about county preparedness and women are more concerned about the preparedness of families. Almost ten percent more women perceive families as unprepared or only somewhat prepared for a biological emergency than their male counterparts, while slightly more than ten percent of men perceive the county as unprepared or only somewhat prepared for a biological emergency.

Figures in Table 3 provide a broader glimpse into the variations between men and women on perceptions of preparedness. For example, women worry about their pets to a far greater extent than the men in this sample, and translate that concern into the priorities they identify for changes in the county's current emergency response plan. Twenty percent (19.2%) of women say that responsibility for pets is very important in the decision to respond, compared to less than four percent (3.4%) of men. Almost ninety percent (89.7%) of all respondents want the county to change priorities to include planning for pet care. These differences are not due to having more household requirements, as measured by household composition. Nor are they explained by having different involvement in the labor market or viewing job commitments and training needs differently.

Variable	Men	Women	Total
% Highly Concerned about Terrorist Chemical Agent	17.5	9.3	14.4
% Personal Health Very Important to Decision to Respond	9.4	0.0	6.0
% Responsibility for Pets Very Important to Decision to Respond	3.4	19.2	9.4
% Pet Owners Unprepared or Only Somewhat Prepared	83.5	95.9	89.7
% Perceive County Unprepared or Only Somewhat Prepared for Bio Emergency	66.4	55.9	62.4
% Perceive Family Unprepared or Only Somewhat Prepared for Bio Emergency	63.5	72.5	66.9

Table 3. Perceived Levels of Preparedness by Gender

Previous studies on paid healthcare providers do not specifically ask respondents to identify actions that would enable their actions during an emergency. To identify response enablers which could provide key insights for Health Department planners, the MRC members in this survey wrote brief phrases describing the two most significant factors that would assist them in fulfilling their job requirements during a disaster. The respondents indicate that assistance with assuring the care of their families during their deployment and providing adequate job-related training are the two most important factors that would assist in fulfilling their MRC role. As key enablers and modifiers of risk perception, these two manageable characteristics of potential emergency responders should attract planners' attention in an effort to maximize volunteers' and paid professionals' participation.

The jobs that MRC volunteers hold routinely also form a source of variability within the group that have a strong impact on their likely reactions during an event. In terms of their ability to respond during a hurricane, occupational groups range in their answers from fifty percent who think they would act to a hundred percent. As an occupational group, nurses report that family protection is a serious impediment to responding, and want policy changes to focus on securing their households. Not surprisingly, the occupational groups that consider their routine jobs an impediment to their volunteering also value policy changes that would provide coverage if they have to miss work to respond to the emergency.

As a source of variation among these volunteers, however, whether the person works full-time, part-time or is currently out of work is more important than the actual job. Well over two-thirds of this group works full-time (69.7%). Still, the third that do not work a full-time job have a very different outlook on their volunteer status. Ninety-percent of those not employed full-time say they were able to respond during an emergency, compared with only 75.2% of the full-time workers. Full-time workers also are four times more likely than part-time employees to be very concerned about a public health emergency, and significantly more likely to worry specifically about their personal health during an emergency response. Seventy-six percent (76.6%) of full-time workers express concern about their personal health during an emergency compared to 52.9 percent of part-time workers. Volunteers who are out-of-work respond much more like part-time workers than their full-time employed counterparts.

When asked directly if their routine job commitments prevent them from responding to an emergency, only 15.2 percent of full-time employees dismiss it as not important. Half of part-time workers dismiss it as a problem. Of course, nearly all (95.5%) of those out of work say other job commitments do not impact their ability to respond in an emergency. Nearly half of the full-time workers also want policy changes in the county to cover any work that they might miss during their emergency service.

E. VOLUNTEER MOTIVATION AND COGNITIVE DISSONANCE

Volunteers can be motivated for many reasons. One previous study hypothesizes that six functions are potentially served by volunteerism. These functions include; volunteerism allows an individual to express humanistic concern for others; learning new skills while utilizing current knowledge and skills; being part of a social group and engaging in activities seen as important to others; the potential of improved career opportunities; the reduction of guilt feelings by the volunteer of being more fortunate; and the personal satisfaction or ego boost derived from participating in a volunteer activity. These functions provide a positive, personal reward and increased satisfaction

and self-esteem for the actual volunteer.⁴⁷ People volunteer because of needs and motives that are important to them and the volunteer activity must fulfill those needs to sustain the volunteer effort.⁴⁸

The sample population in this study had previously chosen to be MRC volunteers. The respondents applied for membership to the county health department MRC, agreed to a credentialing process that included both a professional licensure and criminal background check, and most had engaged in some training and exercise activities with the health department prior to completing this survey on ability and willingness to report to work. It is possible that asking this group of health professionals who have already demonstrated their belief in volunteering if they have concerns regarding their ability and willingness to respond may have caused a cognitive dissonance between two inconsistent belief systems—volunteering and concern about responding to a public health emergency.

Simply stated, cognitive dissonance is the mental stress that develops when a person holds two cognitions that are psychologically inconsistent. Cognitive dissonance theory proposes that individuals will seek to relieve this stress by finding a way to change one or both cognitions to make them consistent. Cognitive dissonance theory is about making sense out of an individual's beliefs, environment and behavior, thus connecting motivation with cognition.⁴⁹ For the health professional in the MRC, the behavior of volunteering may conflict with their belief system that public health emergencies might possibly result in threats to the health and safety for themselves and their families. To remove the dissonance, either the belief or the behavior has to change. Instead of changing the behavior by not volunteering in order to match the belief of possible danger, cognitive dissonance theory suggests that the opposite happens and belief systems adjust to match the current behavior.⁵⁰ Because the MRC volunteer has already publicly

⁴⁷ Clary, Snyder, Ridge, Miene, and Haugen, "Matching Messages to Motives in Persuasion: A Functional Approach to Promoting Volunteerism."

⁴⁸ Clary, Snyder, Ridge, Miene, and Haugen, "Matching Messages to Motives in Persuasion: A Functional Approach to Promoting Volunteerism." 1529.

⁴⁹ Elliot Aronson, "Back to the Future: Retrospective Review of Leon Festinger's--A Theory of Cognitive Dissonance," *The American Journal of Psychology* 110, no. 1 (1997): 127.

⁵⁰ Robert Lindberg, "Seeking the Elusive Balance," *Association Management* 47, no. 1 (January 1995): 86.

committed to volunteering, the volunteer may be more likely to report a higher degree of ability and willingness to report to work. Cognitive dissonance theory describes this inconsistency as a change in the individual's belief system (that volunteering is dangerous) to reduce the conflict of engaging in a behavior that is dangerous. The MRC volunteer may actually change their belief so they do not have to change their behavior.

F. SUMMARY

It is not sufficient to ask volunteers if they are able and willing to report to work during emergency events. They have already declared their intent to participate by joining the group, and the issues of inability or unwillingness to report to work may be in conflict with their behavior.

These groups of volunteers have the opportunity to express their concerns regarding ability and willingness outside of simple "yes" or "no" questions, because volunteers have already chosen to volunteer. When potential conflicts were pre-identified in the survey, the MRC volunteer indicated many of the same concerns included in the literature on response of paid healthcare staff in a public health emergency. When these respondents wrote their concerns in brief statements, again they were consistent with the concerns of the paid health care professionals. These types of questions may provide the respondent with the permission or recognition that barriers to ability and willingness are both possible and problematic.

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VI. RECOMMENDATIONS AND CONCLUSION

A. A STRATEGY FOR DEVELOPING PUBLIC HEALTH SURGE CAPACITY

The need for public health preparedness at the local level is quite clear in the February, 2006, statement of Health and Human Services Secretary Michael Leavitt. At a Maryland pandemic flu summit in Baltimore, he commented, “Any community that fails to prepare and expects the federal government will come to the rescue is tragically wrong. It’s not because we don’t care, don’t want to, or don’t have the money, but because it’s impossible.”⁵¹

The strength of the public health infrastructure at all levels of government is a critical determinant of the speed and efficiency of the public health response. The severity of the consequences of an ineffective response can be measured by the number of people affected.⁵²

Since the 1988 institute of medicine report, *The Future of Public Health*, the ‘disarray’ of the U.S. public health system has been broadly acknowledged. The impressive achievements of public health during the past century and their accompanying improvements in longevity created a sense of complacency about the underlying public health infrastructure, which has deteriorated markedly during the past twenty-five years. The U.S. Centers for Disease Control and Prevention (CDC) declared in 2001 that the U.S. public health infrastructure remains ‘structurally weak in nearly every area.’ Not until the 11 September 2001 terrorist attacks and the subsequent anthrax attacks were any large-scale investments made in the public health infrastructure.⁵³

Integration of public health emergency preparedness in the United States with other, more traditional, public health missions remains a challenge. Lurie and other RAND researchers have remarked that public health often misses opportunities to exploit

⁵¹ Michael O. Leavitt, “A Nation Prepares” (lecture, Maryland Pandemic Influenza Summit, February 24, 2006), <http://flu.maryland.gov/summit.html> [Accessed February 9, 2007].

⁵² Sarah A. Lister, “An Overview of the U.S. Public Health System in the Context of Emergency Preparedness,” *CRS Report for Congress* (March 17 2005), <http://www.fas.org/sgp/crs/homesecc/RL31719.pdf> [Accessed June 22, 2006].

⁵³ Nicole Lurie et al, “Local Variation In Public Health Preparedness: Lessons From California,” *Health Affairs Public Health Preparedness Web Exclusive* (June 2, 2004).

the interface between emergency preparedness and other public health responsibilities. Pandemic influenza planning and surveillance for disease syndromes are two examples.⁵⁴

The challenge for public health is in how to meet the requirements for surge capacity in the 21st century healthcare environment. Epidemiology and response to infectious disease has historically been a benchmark of the public health mission, but significant changes in science and society have resulted in the current need to revisit older public health intervention measures such as mass prophylaxis. Following the polio vaccine mass vaccination campaigns in the early 1960s and the global eradication of smallpox in 1977, public health has limited experience with mass prophylaxis campaigns in response to a biological threat.

Public health is seriously under funded. The mean per capita spending for public health in 2004-2005 was \$149, compared to \$6,423 for overall health care. Continued reductions in funding for essential public health services are projected.⁵⁵ The public health workforce is aging, a substantial proportion of which is poised to retire in the next five years. The number of public health workers dropped from 220 workers per 100,000 Americans in 1980 to 158 workers per 100,000 Americans in 2000, according to the American Public Health Association. In the next few years, state and federal public health agencies could lose up to half of their work force to retirement, the private sector and other opportunities.⁵⁶ The citizens of the United States are aging. In the next 25 years, about one-fifth of all Americans will be age 65 or older. Twenty percent of all Americans, or about 70 million people, will pass their 65th birthday by 2030. The effect of post 9/11 volunteerism has been well documented. Commitment to volunteering increased by nearly 12 percent from 2002 to 2005, according to a new study by the Points of Light Foundation and the Volunteer Center National Network, with interest in

⁵⁴ Nicole Lurie, Jeffrey Wasserman, and Christopher D. Nelson, "Public Health Preparedness: Evolution Or Revolution?" *Health Affairs* 25, no. 4 (July/August 2006).

⁵⁵ "The Government Performance Project: A Case of Neglect," *Governing.Com* (February 2004), <http://www.governing.com/gpp/2004/public.htm> [Accessed October 27, 2006].

⁵⁶ Courtney M. Perlino, "The Public Health Workforce Shortage: Left Unchecked, Will we be Protected?" *American Public Health Association* (September, 2006), <http://www.apha.org/NR/rdonlyres/597828BF-9924-4B94-8821-135F665E9D45/0/PublicHealthWorkforceIssueBrief.pdf> [Accessed November 2, 2006].

volunteering rising most quickly among people age 55 to 64.⁵⁷ An under-funded public health system finds itself with an older workforce in an aging society that demonstrates an increasing interest in volunteerism. This environment seems to be appropriate for the utilization of an MRC.

The vision of public health surge capacity is one of a system that can protect the health of the community and prevent the spread of disease in response to biological or other large-scale emergencies. This goal is accomplished by ensuring the capacity to rapidly expand beyond normal services to meet the increased demand for community-based care through the use of community-based volunteers. The public health system in the United States is not capable of meeting the surge capacity that is necessary during an emergency without developing additional support systems. A health system's ability to expand its services rapidly depends on the availability of qualified personnel and their ability to perform tasks assigned to them. Building a qualified workforce requires planners to recruit new types of health care professionals and ensure that they are prepared, able and willing to respond with the local system. Consequently, a system to recruit, train, credential, protect and effectively activate a corps of volunteer health care providers to provide surge capacity must be the strategic goal of local public health systems.

B. THE MRC VALUE PROPOSITION

Most simply said, the public health system cannot do it alone. Since 2002, public health agencies have used several staffing models to estimate the resources needed to dispense prophylactic medications to their entire population in a 48-hour time period. Most of these agencies have determined that they are not able to meet this target capability themselves. To reach the 1.35 million people in Nassau County, New York, the Health Department would need to operate 35 points of distribution (PODs) on a 24-hours a day basis, requiring over 5,000 staff. Staffing models and actual exercises repeatedly demonstrate the need to develop strategies to meet surge staffing for rapid distribution of public health countermeasures such as antibiotics or vaccinations.

⁵⁷ Deloitte & Touche, USA, LLP, and Points of Light Foundation, *2006 Deloitte/Points of Light IMPACT Study* (2006), http://www.deloitte.com/dtt/cda/doc/content/us_pointsoflight_executivesummary.pdf [Accessed November 3, 2006].

The strategy of organizing a Medical Reserve Corps (MRC) to address public health surge capacity has both a great value in its utility to meet surge capacity and is also a completely new and innovative idea. Founded in 2002, MRC units are community-based, locally organized and utilize volunteers who want to donate their time and expertise to prepare for and respond to emergencies. MRC units strengthen the public health infrastructure of their communities and are valued by the public health agency for their ability to meet a real need and innovative in design and recognition. Unlike the federal medical response programs such as the Health and Human Service's Disaster Medical Assistance Teams (DMAT), federal commitment and participation in local events brings no unique recognition to the volunteer. Medical Reserve Corps have several significant and unique advantages: MRC units respond rapidly, are under local command and protocol, can quickly adapt to local needs and, perhaps most importantly, have a primary commitment to respond in their own community. Figure 15 depicts a strategy canvas comparing DMATs and MRCs in meeting local public health surge capacity.

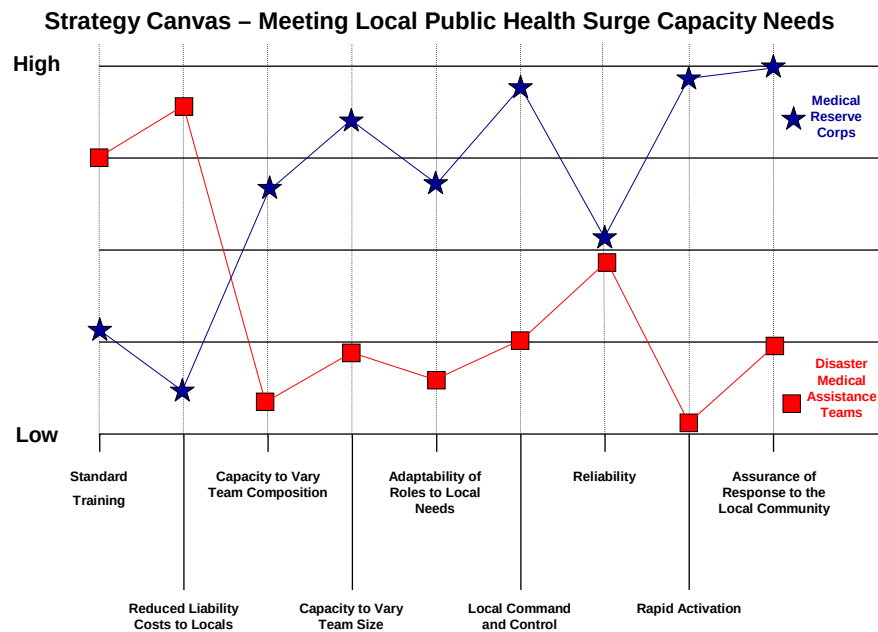


Figure 15. Strategy Canvas: Meeting Local Public Health Surge Capacity Needs

This study benchmarks the strategic issues of ability and willingness of MRC volunteers to report to work with the health department through the use of an anonymous survey that was distributed to all 324 members of the Nassau County Department of Health Medical Reserve Corps between July and September 2006. Data was gathered on the responses of the MRC members relating to these two constructs in the context of their membership with this specific organization. Responses were analyzed and assessed against the benchmark of reduction or removal of the barriers to ability and willingness.

C. BUILDING AN MRC FRAMEWORK

In *Blue Ocean Strategy*, Kim and Mauborgne describe tipping point leadership as an approach that manages the key organizational hurdles of change including cognitive resistance, resource limitations, motivational weakness and political barriers. Tipping point leadership ignores the conventional wisdom that change is dependent on resources and time and instead focuses on points of disproportionate influence.⁵⁸

⁵⁸ W. Chan Kim and Renee Mauborgne, *Blue Ocean Strategy*, Vol. 1 (Boston, MA: Harvard Business School Press, 2005), 240.

The health care system has recognized the problems of hospital overcrowding and lack of surge capacity for many years. Following the anthrax releases in 2001, public health also recognized that their fragile infrastructure is unable to support the extensive epidemiological surveillance, investigations and mass prophylaxis systems that is now necessary. Most every public health professional understand the current public health workforce can no longer handle public health surge capacity alone. The survey of MRC volunteers results in a clearer understanding of who these individuals are and how to elicit the issues that interfere with their motivation to report to work.

The MRC volunteers are ten years older than average health care professionals and may be unable or unwilling to report to work even though they frequently respond affirmatively when questioned about their intent. Unlike the research on paid health care professionals, MRC volunteers may say "yes" even when their concerns and situations may actually result in a more accurate answer of "no". Cognitive dissonance and motivational forces active in the process of volunteering may cause this group of volunteers to experience difficulty recognizing their own barriers to response. Systems must be in place to elicit information on potential barriers and establish programs to meet those needs in order to improve MRC response in a disaster.

New funding mechanisms quickly, if not satisfactorily, addressed resource distribution following 2001 with significant federal preparedness monies directed to states and locals. Although funding of several core public health programs were actually cut, federal funding targeted to preparedness was established and core capacity standards identified. Additionally, in 2002, the Department of Homeland Security Citizen Corps funding was directed specifically to the Medical Reserve Corps to establish local volunteer medical professionals to address local community need.

This study demonstrates the need to reallocate and redesign resource systems to reduce or resolve barriers for the MRC volunteer. Professional liability protections must be ensured and support service programs for MRC member families during deployment such as sheltering, dependent care and assurance of provision of protective measures must be developed. Transportation resources were also identified as a very important

concern for the volunteer. Both the need for transportation and the need for assurances of unrestricted passage to the worksite are resource-related concerns.

Political barriers for the MRC organization include public health staff who may feel threatened by volunteers performing work they routinely perform, hospital administrators who perceive MRC members as being drawn from hospital staff with acute care responsibilities and local government officials who must assume the liability for MRC professional actions while working for the health department. The hospitals were assured that MRC members would be recruited from areas of practice outside the acute care setting. Both public health and government experienced the value of MRC when they were activated and assisted in actual local emergent situations. Coalitions were formed with the hospitals and a process developed to deploy MRC to hospitals in specific instances. These changes have been incremental and validated by actual experiences.

The potential for political hurdles remains, however, both for the MRC volunteer and in the widespread recognition of the preparedness disparities that exist for the poor, the homeless, the non-English speaking populations and the elderly. MRC members report they are prepared to respond but they may not be accurate. The local political leadership must support the message that barriers are recognized and systems are in place to address them to facilitate the volunteer's response and ensure the success of future deployments. The political cost of failure of an MRC response during a public health surge event would most likely result in the termination of the MRC strategy.

Motivation to volunteer with the MRC is a product of the post 9-11 sense of community, as well as an opportunity for individuals to gain unique local recognition and association with a first responder organization. Although sometimes seen as "resume building," MRC members are under no obligation to respond to any event, and membership provides little incentive other than personal satisfaction. Similar to recent research on paid health care workers ability and willingness to report to work during an emergency, barriers exist for the MRC volunteer, and the barriers are quite similar.

Thus, using the principles of tipping point leadership, motivation is the primary organizational barrier to establishing a MRC that will meet the needs of public health

surge capacity. Recent studies of paid health care workers identify ability and willingness as the two barriers that interfere with intention to report to work in an emergency. Ability is defined as the capability (capacity) of the individual to report to work and willingness is defined as the personal decision (motivation or desire) to report to work. Qureshi⁵⁹ reports that health care workers are most able to report to work for a mass casualty incident, environmental disaster and chemical event and least able to report during a smallpox epidemic, radiological event, SARS outbreak or severe snow storm. Barriers to ability include transportation and family care. Health care workers were are willing to report during a snowstorm, mass casualty incident or environmental disaster, and least willing to report during a SARS outbreak, radiological event, smallpox epidemic or chemical event. Barriers to willingness are fear and concern for family and personal health.

The existing literature concludes that the key ingredients to volunteering are ability and willingness, both of which are primarily interpreted as motivational issues. Ability, however, is usually understood as the capability of overcoming a variety of resource constraints. The literature on volunteerism describes volunteers, in general, as being motivated by a deeply rooted altruism which appear to overcome resource constraints such as transportation, other work duties and general family responsibilities.

However, this study of MRC volunteers suggests that, even when altruism is strong, there are real resource constraints, there are real political hurdles, and there are still real motivational and cognition hurdles, although volunteers are likely to respond in a very different manner than paid staff.

Cognitive dissonance may explain why this group of volunteers has difficulty recognizing their personal barriers to response. Is it not cognitive dissonance, for example, for volunteers who report they are able and willing to volunteer to say at the same time that there are many obstacles to their participation? Is it not cognitive dissonance that these volunteers simultaneously say that the hospital and county are prepared, but that the poor, the homeless, the elderly, and the non-English speakers are not prepared at all?

⁵⁹ Qureshi, Gershon, and Sherman, "Health Care Workers' Willingness and Ability to Report to Duty During Catastrophic Disasters."

D. RECOMMENDATIONS FOR STRATEGY IMPLEMENTATION

MRC members identify safety and security of their families, adequate training, facilitated travel and site access and personal protective measures as assisting them in fulfilling their roles during a disaster. Initiatives must reflect and specifically address the potential resource constraints, political and cognition hurdles and motivational barriers for these health care volunteers. Public health agencies that plan to use volunteers to meet surge capacity must commit to effective partnerships with other municipal and community-based organizations to seek feasible solutions to response barriers.

The recommendations of this study are organized according to the four organizational hurdles to change: cognitive resistance, resource limitations, motivational weakness and political barriers. They focus on areas with uncontested space rather than competing for the same limited resources and time.

Resource distribution recommendations ensure the availability of systems and services necessary to facilitate the deployment of volunteers. Recommended actions include the following:

- Municipalities should develop a system of providing professional liability protections for MRC members through use of local administrative laws that recognizes the volunteer as an agent of the sponsoring governmental agency.
- Volunteers identify transportation as a very important concern. Both the need for transportation and the need for assurances of unrestricted passage to the worksite are resource-related concerns. Municipal transportation and planning agencies can utilize available public transportation systems to develop a system to transport MRC volunteers from designated collection points to their work locations. Police Department and other public safety organizations including the county Office of Emergency Management (OEM) can develop a recognized MRC identification to ensure passage through roads to report to the work site.
- Support service programs for MRC member families must be developed and include planning for sheltering, “at-home” support for dependents and pets and a plan for provision of protective measures for the families of volunteers. A best practice for MRC organizations would be a program within the organization that provides the supportive care necessary to enable the member to report to work. This “Responders First” model ensures that caring for the responder’s resource needs is the first priority

of the organization and primary to the ability of the MRC member to perform any other community work. The Citizen Corps CERT teams may be an ideal partner in this effort.

Motivational recommendations increase the value proposition of volunteering. Recommended actions include the following:

- Hospitals should be perceived as partners and not competitors for staffing during health care surges. Health department-sponsored MRCs should have a Steering Committee that includes regional hospital members and develop a system to share MRC resources between the community and the acute care settings.
- Health care professional associations such as the AMA and the ANA should recognize, actively recruit and support members to volunteer in their local community. The value of these activities can be reinforced and promoted through continuing medical education credits and reduced membership benefits.
- Municipalities may extend the benefits provided to other volunteer emergency responders such as tax credits and pension plans to MRC members.
- Planned exercises that include the deployment of registered MRC volunteers should include a system to document those volunteers who are, in fact, unable to respond. Efforts must continue to understand the extent of the problem and the barriers that are present.

Cognitive recommendations enable both MRC managers and volunteers to recognize that even well-meaning volunteers have real and personal barriers to responding, have a potential for experiencing cognitive dissonance and may, in fact, be quite fearful of responding to a public health emergency. Systems should be in place to elicit information on potential barriers and establish programs to meet those needs in order to improve MRC response in a disaster. Recommended actions include the following:

- The initial orientation and credentialing of MRC volunteers should include a form that identifies all possible barriers to responding. Including this form as part of the standard MRC enrollment process provides the information to the sponsoring agency and may also communicate to the volunteer those barriers are expected, understood and will be addressed.
- The initial orientation and credentialing of MRC volunteers should include a self-assessment of experience, clinical abilities and perceived training needs. Including this form as part of the standard MRC enrollment process communicates to the volunteer that necessary training will be provided to meet role expectations.

- Provide opportunities for clinical experiences in public health that are similar to activities required in an emergency. For example, MRC members can work with public health epidemiologists for case investigations of routine communicable diseases to understand the process of dealing with communicable disease investigations and reduce the fear of working with infectious disease.
- This study demonstrates that individuals who report that they are less likely to respond to emergency events identify lack of training as a barrier to response. Training curriculums for MRC members must meet the identified training needs of the MRC member, with their direct input. The training provided must meet the training needs identified by the individual, or they will continue to perceive lack of training as a barrier to response.

Political recommendations recognize the potential effects of both enabling and oppositional forces of vested interests or stakeholders on the success of meeting public health surge capacity with community volunteers. Recommended actions include the following:

- MRC members report they are able and willing to respond, but that assessment may not be accurate. The local political leadership must support the message that barriers are recognized and systems are in place to address them to facilitate the volunteer's response and ensure the success of future deployments. Local and state regulations that enable volunteer firefighters to meet their community emergency responsibilities should be extended to MRC members. MRC organizations should seek memorandums of understanding with private employers to facilitate their employees' local emergency response.
- The second political hurdle this study identifies is disparity. The political cost of emergency preparedness disparities for poor, homeless, and elderly was quite evident following Hurricane Katrina and remains a huge factor in developing an effective public health surge capacity strategy. These groups, and other communities of people with special needs, have not as yet adequately integrated preparedness and response planning. MRC members and their sponsoring agencies must recognize the challenges of providing culturally competent services within these communities and develop strategies that translate preparedness and response information. MRCs may look to developing partnerships with community-based agencies that service these populations to deliver preparedness information and to develop MRC volunteers within these communities.

E. CONCLUSION

The model of using community-based volunteer health professionals to meet local public health surge capacity is intuitively reasonable and highly effective as demonstrated

in many actual emergency events. This study suggests that volunteer motivation and the possible effects of cognitive dissonance may affect the responses of volunteers when they are asked if they are able and willing to respond to an emergency, and their responses may be quite different than posing this question to paid healthcare staff. The volunteers belonging to an identified emergency response organization such as the MRC may exacerbate this difference.

MRC members report they are prepared to respond but that assessment may not be completely accurate. This study reveals the need for organizational mobilization, new program initiatives and an acknowledgement that even volunteers have constraints. These conclusions may greatly impact the potential volunteer population as a whole. Perhaps the focus on “ability and willingness” is too restrictive and may obscure the significance of programs that recruit, educate, nurture and enable volunteers to work.

Public health leaders recognize the need for local volunteer health professionals in meeting public health surge capacity demands. This study demonstrates that it is simply not enough to ask volunteers if they can and will respond to an emergency. In many ways, it is similar to asking volunteer firefighters if they will respond to a fire. They almost always respond affirmatively, but there may be many barriers that actually interfere. Regardless of what the volunteers say, jurisdictions need initiatives, programs and resources to ensure a sufficient public health response to emergencies.

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APPENDIX A: MEDICAL RESERVE CORPS (MRC) PUBLIC HEALTH EMERGENCY SURVEY

SURVEY # _____

Nassau County Department of Health
240 Old Country Road, Room 607B Mineola, NY 11501
Medical Reserve Corps (MRC) Public Health Emergency Survey

*Thank you for taking a moment to complete this survey. All responses are confidential.
Please do not write your name on it. Seal in the accompanying envelope upon completion.*

1. WHAT IS YOUR PRIMARY JOB CATEGORY?

- | | | |
|---|---|---|
| ☐ 1. Physician Assistant | ☐ 5. Physician | ☐ 9. RN |
| ☐ 2. EMT-B | ☐ 6. Veterinarian | ☐ 10. Nurse Practitioner |
| ☐ 3. EMT-CC/P | ☐ 7. Social Worker | ☐ 11. Pharmacist |
| ☐ 4. Psychologist | ☐ 8. Dentist | ☐ 12. Other: _____ |

2. WHAT IS YOUR CURRENT EMPLOYMENT STATUS?

- ☐ 1. Full-time ☐ 2.. Part-time ☐ 3. Not employed

3. IF EMPLOYED, WHAT SCHEDULE DO YOU USUALLY WORK?

3A) DAYS:

- ☐ 1. Weekdays ☐ 2. Weekends ☐ 3. Both

3B) NUMBER OF HOURS PER DAY:

- ☐ 1. less than 4 hours/day ☐ 2. Between 4 to 8 hours/day ☐ 3. More than 8 hours/day

3C) TIME OF DAY:

- ☐ 1. Daytime ☐ 2. Evening ☐ 3. Nights

4. HOW MANY YEARS HAVE YOU WORKED IN HEALTH CARE? _____ Years.

5. WHAT IS YOUR AGE? _____ Years.

6. WHAT IS YOUR GENDER? ☐ 1. Male ☐ 2. Female

7. How many people live in your household? _____

8. What is your marital status?

- ☐ 1. Single ☐ 2. Married ☐ 3. Divorced/Separated

9. CHECK ANY OF THESE THAT YOU ARE RESPONSIBLE FOR:

- ☐ 1. Children ☐ 2. Elders ☐ 3. Pets 4. Other: _____

10. DO YOU HAVE OTHER PEOPLE AVAILABLE WHO COULD TAKE CARE OF THESE RESPONSIBILITIES FOR YOU IN YOUR ABSENCE?

- ☐ 1. Yes ☐ 2. No ☐ 3. Not Sure

11. DO YOU HAVE OTHER PEOPLE AVAILABLE WHO COULD TAKE CARE OF THESE RESPONSIBILITIES IN YOUR ABSENCE DURING AN EMERGENCY?

- ☐ 1. Yes ☐ 2. No ☐ 3. Not Sure

PAGE 1 of 6

SURVEY #

12. DOES YOUR SPOUSE OR PARTNER HAVE TO REPORT TO WORK DURING EMERGENCIES?

- ☐ 1. Yes ☐ 2. No ☐ 3. Not Sure ☐ 4. Not applicable

13. HOW CONCERNED ARE YOU ABOUT EXPOSURE TO TERRORIST-RELATED CHEMICAL AGENTS WHILE VOLUNTEERING AT THE MRC AT WORK?

- ☐ 1. Not at all ☐ 2. Moderately ☐ 3. Highly

14. HOW CONCERNED ARE YOU ABOUT CONTRACTING A DISEASE WHILE VOLUNTEERING WITH THE MRC DURING A BIOLOGICAL EMERGENCY?

- ☐ 1. Not at all. ☐ 2. Moderately ☐ 3. Highly

15. RESPONSE TO EMERGENCIES

PLEASE CONSIDER THESE SIX SITUATIONS AND ASSUME THAT ALL ROADS ARE PASSABLE AND TRANSPORTATION SYSTEMS ARE WORKING. INDICATE YOUR **ABILITY** AND **WILLINGNESS** TO VOLUNTEER DURING A PUBLIC HEALTH EMERGENCY.

Scenario	Ability refers to capability. Do you have the means and the resources to volunteer?			Willingness refers to a personal decision. Do you intend to volunteer?		
	Would You Be Able to volunteer with the Nassau MRC?			Would You Be Willing to volunteer with the Nassau MRC?		
	Able to volunteer	Not able to volunteer	Not Sure	Willing to volunteer	Not willing to volunteer	Not Sure
15 A) Routine annual influenza programs suspended due to vaccine shortage. Points of Distribution (PODs) need to be staffed with MRC to rapidly administer available vaccine to thousands of citizens.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
15 B) Smallpox outbreak in Nassau County. 200 patients admitted to 10 hospitals. DOH to establish Smallpox vaccination PODs with MRC.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
15 C) A Category 3 hurricane results in the evacuation of all residents south of Sunrise Highway. MRC is needed to provide care for individuals in a special needs shelter operated by the Health Department.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

PAGE 2 of 6

SURVEY #

	Ability refers to capability. Do you have the means and the resources to volunteer?			Willingness refers to a personal decision. Do you intend to volunteer?		
	Would You Be Able to volunteer with the Nassau MRC?			Would You Be Willing to volunteer with the Nassau MRC?		
Scenario	Able to volunteer	Not able to volunteer	Not Sure	Willing to volunteer	Not willing to volunteer	Not Sure
15 D) Confirmed nerve agent release in Roosevelt Field Mall. MRC asked to assist with patient triage at local hospital emergency departments.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
15 E) Radioactive explosive device (dirty bomb) detonated at Jones Beach Marine Theatre. MRC asked to assist answering calls at telephone center for the thousands of residents who are calling the Health Department for direction.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
15 F) Six confirmed cases of H5N1 (Avian) Influenza in NYC. One suspect case in Nassau. Nassau to distribute antivirals to identified at-risk populations with assistance of MRC.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

16. HOW SIGNIFICANT A ROLE DO YOU THINK YOU WOULD PLAY IN THE HEALTH DEPARTMENT'S OVERALL RESPONSE TO A PUBLIC HEALTH EMERGENCY?

- ☐ 1. Not significant
 ☐ 2. Moderately significant
 ☐ 3. Highly significant

IN THE EVENT OF A MAJOR DISASTER THAT AFFECTS NASSAU COUNTY

17. IF YOU ARE ABLE AND WILLING TO VOLUNTEER OR NOT SURE IF YOU WOULD VOLUNTEER, INDICATE WHICH DAYS OF THE WEEK AND HOURS YOU WOULD VOLUNTEER WITH THE MRC (check all that apply)

17A) DAYS

- ☐ 1. Weekdays
 ☐ 2. Weekends
 ☐ 3. Both

17B) TIME OF DAY

- ☐ 1. Daytime
 ☐ 2. Evening
 ☐ 3. Nights

SURVEY #

18. ABILITY - Ability refers to capability (the means and the resources to volunteer).

IF YOU ARE NOT ABLE OR NOT SURE ABOUT VOLUNTEERING DURING A PUBLIC HEALTH EMERGENCY, PLEASE CHECK AND RANK ALL OF THE REASONS THAT MIGHT APPLY:

- | | | | |
|---|---|--|--|
| ☐ A. Child care obligations | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ B. Lack of Training | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ C. Elder care obligations | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ D. Personal health problems | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ E. Pet care obligations | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ F. Other job commitment | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ G. Other (please describe) | | | |
-
-

19. ABILITY

IF YOU ARE NOT ABLE OR NOT SURE ABOUT VOLUNTEERING DURING A PUBLIC HEALTH EMERGENCY, PLEASE BRIEFLY DESCRIBE WHAT WOULD NEED TO CHANGE TO MAKE IT POSSIBLE FOR YOU TO VOLUNTEER

20. WILLINGNESS

Willingness refers to a personal decision (intention to volunteer).

IF YOU ARE NOT WILLING OR NOT SURE ABOUT VOLUNTEERING DURING A PUBLIC HEALTH EMERGENCY, PLEASE CHECK AND RANK ALL OF THE REASONS THAT MIGHT APPLY:

- | | | | |
|---|---|--|--|
| ☐ A. Concern for personal health/safety | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ B. Lack of personal protective equipment | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ C. Concern for health of family member(s) | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ D. Lack of information regarding risk | ☐ 1. Not important | ☐ 2. Moderately important | ☐ 3. Very important |
| ☐ E. Other (please describe): | | | |
-
-

21. WILLINGNESS

IF YOU ARE NOT WILLING OR NOT SURE ABOUT VOLUNTEERING DURING A PUBLIC HEALTH EMERGENCY, PLEASE DESCRIBE WHAT WOULD NEED TO CHANGE TO CONVINCE YOU TO VOLUNTEER:

22. Using a scale from 1 to 5 (with 1 being unprepared and 5 being very prepared) please answer the following questions:

a. Nassau County's level of preparation for a biological emergency?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

b. My community's level of preparation for either a natural or bioterrorism emergency?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

c. My family's level of preparation for either a natural or bioterrorism emergency?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

23. During Hurricane Katrina and other emergencies, we saw that different groups had varying levels of preparedness. Using the same 1 to 5 scale, please rank the preparedness of the following groups to respond to a public health emergency:

a. Nassau County leaders and politicians?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

b. Local first responders – police, fire, emergency managers?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

c. Local voluntary organizations – e.g., American Red Cross, etc.?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

d. Low income groups?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

e. High income groups?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

f. Elderly?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

SURVEY #

g. Hospitals?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

h. Persons with Pets?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

i. Homeless?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

j. Non-English speakers?

☐1. Unprepared ☐2. Somewhat prepared ☐3. Prepared ☐4. Better prepared ☐5. Very Prepared

24. List, in priority order, the five steps that local officials should take to improve the County's preparedness for a public health emergency. Please list the most important as Priority 1.

Priority 1: _____

Priority 2: _____

Priority 3: _____

Priority 4: _____

Priority 5: _____

25. Please list the two most **significant barriers or problems** that would prevent you from fulfilling your job requirements during a disaster (please use brief phrases):

1) _____

2) _____

26. Please list the two most **significant factors that would assist you** in fulfilling your job requirements during a disaster (please use brief phrases):

1) _____

2) _____

Thank you for completing this questionnaire!

If you have any questions, you may contact:

Shelly Schechter: Shelly.Schechter@hhsnassaucountyny.us (516) 571-2670

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APPENDIX B: LETTER DATED AUGUST 1, 2006

THOMAS R. SUOZZI
County Executive

DAVID M. ACKMAN, M.D., M.P.H.
Commissioner

Nassau County
Department of Health
MEDICAL RESERVE CORPS

240 Old Country Road - Mineola, New York 11501-4260
Voice: 516-571-2672 - Fax: 516-571-1666



August 1, 2006

Dear Medical Reserve Corps Member:

I am the Director of the Office of Emergency Preparedness in the Nassau County Department of Health and also a student in the Center for Homeland Defense and Security at the Naval Postgraduate School in Monterey, California. My thesis work includes a survey of all Nassau County MRC members to identify any issues or barriers that may adversely affect the ability or willingness of the volunteers to participate during a public health emergency. The goal of this survey is to identify these barriers so that they can be addressed, thus improving the chances that most MRC members will be able and willing to volunteer when the need arises.

I ask that you please complete the survey, place it in the enclosed self addressed, stamped envelope, and then mail it back to me. I anticipate that it will take you between 20-30 minutes to complete the survey. *If you already completed this survey at the July 20, 2006 MRC meeting at the Nassau Bar Association, I thank you for your participation and ask that you disregard this letter and survey.*

Your cooperation in completing this survey will benefit the MRC Unit as a whole. I will use the information to address members' issues for responding during a public health emergency.

Your participation in this survey is strictly anonymous. Once completed, we will not know who responded to the survey. Please DO NOT place your name or any other personal identifier on the survey or return envelope.

Participation in this survey is voluntary. If you decide not to participate, it will in no way affect your membership or status in the MRC. Completion and return of the survey will mean that you have voluntarily consented to participate. If you have any questions, please do not hesitate to contact me by phone at: (516) 571-2670 or by email [shelly.schechter@hhsnassaucountyny.us]

Thank you for your consideration of this important project.

Sincerely,

Shelly Schechter, R.N., MSN
Director, Office of Emergency Preparedness
Nassau County Department of Health

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APPENDIX C: LETTER DATED SEPTEMBER 15, 2006

THOMAS R. SUOZZI
County Executive

DAVID M. ACKMAN, M.D., M.P.H.
Commissioner

Nassau County
Department of Health
MEDICAL RESERVE CORPS

240 Old Country Road - Mineola, New York 11501-4260
Voice: 516-571-2672 - Fax: 516-571-1666



September 15, 2006

Dear Medical Reserve Corps Member:

I am currently completing graduate work in security studies at the Center for Homeland Defense and Security at the Naval Postgraduate School in Monterey, California. My thesis includes a survey of all Nassau County MRC members to identify issues or barriers that affect the ability or willingness of MRC volunteers to report to work with the Health Department in a public health emergency. The goal of this research is to identify barriers and make recommendations for change, thus improving the opportunities for MRC members to volunteer when needed. I ask for your input in order to have the most complete and accurate information on which to base these recommendations.

In early August I mailed a survey to all 325 MRC members and to date have received 150 responses.

- **If you already completed this survey at the July 20, 2006 MRC meeting at the Nassau Bar Association or by mail in August, I thank you for your participation and ask that you disregard this letter and survey. Do not complete a second survey.**
- **If you are one of the MRC members who have not yet completed this survey, I ask that you do so at this time. Your help in achieving a 75% response rate will strengthen the results of the study and recommendations. Please complete the survey and return it in the enclosed self addressed, stamped envelope. I anticipate that it will take you between 10-15 minutes to complete.**

Your participation in this survey is strictly anonymous. Please DO NOT place your name or any other personal identifier on the survey or return envelope. Participation is voluntary. If you decide not to participate, it will in no way affect your membership or status in the MRC. If you have any questions, please do not hesitate to contact me by phone at: (516) 571-2670 or by email [shelly.schechter@hhsnassaucountyny.us]

Thank you for your time and consideration of this important issue.

Sincerely,

Shelly Schechter, R.N., MSN
Director, Office of Emergency Preparedness
Nassau County Department of Health

Enc.

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